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# Railway Age Gazette


SECOND HALF OF 1916—No. 17.

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# Railway Age Gazette

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\*Illustrated.

Archer Wall Douglas, writing in the New York Tribune on "The Farmer's New Vision," says: "The farmer is the

#### The Fixed Price for a Product

only producer who has really nothing to say about the selling price of his products and that is what is troubling him now." Surely transportation may be classed as a product, and certainly the producers of railroad transportation have really nothing to say about the selling price of this product. Mr. Douglas goes on to say: "The price of everything that he [the farmer] raises is determined principally by competition, local, national and world-wide, and by marketing facilities or the lack of them." What would Mr. Douglas say if farmers' prices had been reduced over a series of years by competition and then the department of agriculture had stepped in and without correcting upward any of the inequalities which the vagaries of competition had created, had clamped the lid down on any attempt of the farmers to increase the selling price of their product where changed competitive conditions would permit it. It is such an old story now, this taking out of the hands of the managers of railroads any say as to what the selling price of their products shall be, that writers on economic problems are in danger of forgetting it entirely. It is worth while, therefore, occasionally to point out the facts, especially when there is some unintentional evidence, such as this of Mr. Douglas', as to how the other fellow would feel were he in like position.

Men who deal directly with the cash of large corporations, railroads or industrials, are of necessity exact and exacting.

#### Society of Rail- way Financial Officers

The duties of treasurers of different railroads vary somewhat, but one important part of the work of all of them is the settlement of balances or of accounts as between different railroad companies. An immense amount of friction can be avoided in such settlements if there is a sympathetic understanding between the officers of different roads. An association such as the Society of Railway Financial Officers can perform two very important functions. By bringing the treasury officers of the different roads together at least

once a year it can establish a basis of understanding and of co-operation in the settlement of accounts which could not possibly be obtained without personal acquaintanceship. It can also be the medium through which reforms in practice can be accomplished. The first object is comparatively quickly attained, and good results are apparent to every member. The other object is far slower of attainment. Especially is this true where some radical and far-reaching reform is aimed at, such as the clearing house plan for the settlement of inter-railroad balances, which has been advocated by T. H. B. McKnight, of the Pennsylvania Lines West, who was president of the Society of Railway Financial Officers during the past year. Slow, however, as the adoption of new methods may be, the fact that they are discussed formally in meetings of the society or informally among the members of the society at the annual meeting place, shows progress is being made.

A shortage of cars is but one of many reasons for the present car shortage, according to the report of two inspectors for the

#### Reasons for Car Shortage

Interstate Commerce Commission detailed to investigate complaints regarding the conditions in Nebraska. The report is noted elsewhere. The inspectors found plenty of evidence of car shortage; in fact, they reported that the conditions would probably get worse instead of better; but they also found a shortage of terminal facilities, of elevator capacity, of loading and unloading facilities and such a shortage of warehouse capacities that consignees are holding freight cars out of service and using them for storage. In other words, they did not try to place all the blame for the conditions on the railroads; they found that while the facilities of the railroads are inadequate for the unprecedented volume of traffic now moving, the shippers who are so loudly complaining about the railroads have also failed to provide themselves with the facilities necessary to handle their business. They not only failed to find evidence to substantiate the charges that the railroads are discriminating against the shippers of Nebraska, but they found that the railroads are doing the best they can and succeeding remarkably well under the circumstances; and



they even go so far as to suggest that if it were possible for the railroads to furnish more equipment, the business could not be handled as satisfactorily as it is being handled, because of the congestion that would result. The report says nothing about some of the reasons that might be mentioned as to why the railroads have not been able to increase their equipment and other facilities, but it gives an interesting recapitulation of the other reasons for the acuteness of the present situation, most of which are attributable to the great prosperity this country is experiencing as a result of the necessities of the warring countries of Europe. Probably most of those who are complaining about the car shortage would complain still more if conditions were such that the railroads had more cars than they needed at this season of the year, or if they were asked to pay freight rates high enough to enable the railroads to supply all the cars everybody wanted during the rush period. Shippers in many other states are charging the railroads with discriminating against their states in the distribution of cars. It might be interesting if the commission's inspectors should render a similar report of investigations in the states surrounding Nebraska.

### THE STEEL MARKET

**W**HEN the railroads went into the iron and steel market for their 1916 requirements they were confronted with prices and delivery conditions so entirely different from those obtaining during the two preceding years that it seemed inconceivable to most railway men that such conditions could continue indefinitely. The steel manufacturers on the other hand predicted further advances and it is now well established that there can be little improvement in the steel market from the standpoint of the purchaser for some time to come.

While prices in general have not experienced any repetition of the rapid advance of the previous year, the steel market during 1916 has been characterized by marked stability accompanied by small but steady increases. Structural shapes advanced between March, 1915, and March, 1916, from \$1.15 per 100 lb. to \$2.25, and the price at present is in the neighborhood of \$2.75. Track spikes, which were worth \$1.35 in March, 1915, and had advanced to \$2.50 in March, 1916, now cost from \$2.65 to \$2.90. Similarly carbon steel track bolts advanced from \$1.85 to \$2.50, and are now quoted at from \$3.25 to \$3.50.

The present prosperity of the steel industry is by no means dependent upon the orders for strictly war materials. Activity in ship building and the requirements of the railways both here and abroad have an important influence. It is true that at the present time the unfilled orders for the United States Steel Corporation aggregate 350,000 tons less than the maximum of 9,870,334 tons on the books in May, 1916, but the present figure is so much in excess of normal conditions before the war that the recent decrease is insignificant.

In the case of two commodities largely used by railroads the conditions differ somewhat from those prevailing as to the other steel products. In the case of rails the question was one of delivery only for a considerable time after the general advance in the prices of all other steel products and it was supposed that the steel manufacturers, in order to sustain the logic of their position as to a fixed price on this commodity entirely independent of variations in the prices of other steel products, would continue to maintain the existing price. The railroads were doomed to disappointment, however, for in May, 1916, the cost of rails was advanced \$5 per ton. Since that time the difficulty as to delivery continues. Roads which failed to arrange for their rail requirements much earlier than was their usual custom are now in serious straits. One line which recently found it necessary to place an order for 25,000 tons was required to accept Bessemer rails in order to obtain delivery in the second half of 1917.

The Canadian mills, which, after the passage of the Underwood tariff law, gave the American roads an alternative market, have been of no avail in recent months because of their almost complete diversion to the war manufactures.

In the case of fabricated structural steel the trouble has arisen not from increased activity of the fabricating shops but from the difficulty which these shops have experienced in obtaining delivery of the plain materials required, structural steel projects have been affected much less by the abnormal war prosperity than by the high prices. As a result the shops are not working to capacity, although they have about as much to do as the labor conditions and deliveries will permit. Orders in the hands of the fabricators at the present time are materially short of the shop capacities.

Because of extremely high prices and the long delay in obtaining delivery many railroads have abandoned or postponed such construction projects as could well be deferred. However, unless these improvements can be delayed indefinitely or deferred until a date which will presumably place them beyond the end of the present war, the orders for the iron and steel supplies which they involve may as well be placed now, for there is every indication that present prices will be at some advantage over those obtaining a few months hence. The labor market is of course also another factor in all these projects and must be taken into consideration.

### "THE HIGH COST OF EXPEDIENCY"

**T**HIS paper recently has published three remarkable letters on the railway labor situation, written by men who have been in the closest touch with it at first hand. The letters referred to and the issues in which they were published are as follows: "The High Cost of Expediency" by "An Ex-Trainmaster," September 15, page 443; "Times Are Rotten Ripe for a Change" by "A Former Yardmaster," October 6, page 587; "A Protest to American Railroad Executives" by "A Superintendent," October 20, page 688. These letters are significant and important because of the array of facts regarding the labor situation which they present in vigorous and telling fashion. They are even more significant and important because of the state of mind and attitude of many officers of the ranks of superintendent, trainmaster, yardmaster, master mechanic, road foreman of engines, etc., which they indicate.

Let us first glance at the facts and conditions to which they refer. Certain classes of the employees of the railways of the United States have been raised to a favored caste. These include engineers, firemen, conductors, brakemen, flagmen, and, to some extent, machinists and other shop men. They have formed unions. These unions constantly have grown in power. Year by year they have made demands upon the railway managements, first reasonable and then unreasonable. They have steadily backed up these demands with the threat of strikes. The executive officers, feeling deeply their responsibility, have often permitted appeals to be made by the men from the superintendent to the general superintendent, to the general manager, to the vice-president in charge of operation, and even to the president, and in many cases have yielded to them merely to keep peace. By the exercise of constant pressure the employees belonging to the train service brotherhoods have succeeded in securing arrangements in respect to discipline, promotion, and conditions of work and wages which are unparalleled in all industry. They get more money in proportion to the arduousness and the value of the services they render than any other class of men in the world who work with their hands. There are, to be sure, not a few men in these crafts who work long hours for compensation which cannot be considered large, but, taking the members of these crafts as a whole, they are truly the "aristocrats of labor."

On the other hand, we have that large majority of railway



employees which are not organized, or who at least have not profited by organization to anything approaching the extent to which the employees in train service have profited by it. Just above the employees in general we have quite a large body of men who exercise direct supervision over the work of employees. Some of these are regarded as employees, others are officers. It is very difficult to say with precision whether certain men are employees or officers. This is true, for example, of the section foremen and shop foremen. It is incorrect and unfair to say, as sometimes it has been said, that the unorganized employees and the officers in the lower ranks have not for a period of years received any increases in their wages. The average wage of the 80 per cent of railway employees not engaged in train service increased 35 per cent between 1906 and 1914. But the wages received by these employees are much less than those paid to the employees in train service, and the increases in them have been relatively much less than those in the wages of the men in train service. As to the officers, from superintendents down, their compensation in many cases is less than that of engineers and conductors, and in many cases less even than that of some firemen or brakemen.

The unorganized employees average more days' work per month, and probably average more hours' work per day, than the men in train service. This is even more true of officers, such as superintendents, trainmasters, and road foremen of engines, and of foremen, such as those having charge of shops and track, who may be said to be always on duty.

The subordinate officers and the unorganized employees have for years watched with growing discontent the increasing discrimination between themselves and the employees in train service. They have felt, and justly felt, that they are more loyal and render relatively better service to the companies than the men in train service, that they stay at home and work while the men in train service are engaged in lobbying for legislation to increase the burdens carried by the railways and to reduce the efficiency of their operation, and that the managements ought, therefore, to show more consideration for them and to resist more vigorously the unreasonable course taken by the men in train service. This feeling has long existed and became acute while the recent wage movement of the train service employees was in progress. It is not, perhaps, due so much to a belief on the part of the unorganized employees that they are underpaid as to the belief that a discrimination is practiced against them and in favor of the train service employees. The man or paper that calls attention to this situation may be accused of stirring up discontent among the unorganized employees. The fact is, that the discontent exists already, as is clearly shown by such letters as those we have recently published, and by other expressions which have come to us; and it is worse than idle to say that those who refer to it are "stirring it up."

The Adamson law is merely an act to raise the wages of the men in train service. In other words, it is an act greatly to increase the disparity already existing between the wages of 20 per cent of the employees on the one hand and 80 per cent on the other, including in the latter the officers of the lower ranks. If this law is permitted to go into effect either because the railway companies do not fight it in the courts or because the courts uphold it, the effect must inevitably be greatly to aggravate the labor situation on the railways. This fact is, from a purely railway standpoint, the main reason why the managements of the railways should spare no effort to either get the law repealed or to get it nullified. If the wage advance sought to be given by this law to train service employees is given, how are the managements going to deal with the rest of the people on the payroll? That is the most serious question raised by this outrageous piece of legislation.

It would seem that there is only one course which the railway managements can follow, if they are not going to allow the labor situation to become so acute as to cause far more

serious trouble than they have ever previously encountered. This course is by some means or other to reduce the discrimination in wages and conditions of work between the various classes of employees. In order to do this they must prepare themselves to offer far more courageous and determined resistance to the demands of the men in train service than they have ever offered before. If this finally leads to a strike, then the strike should be allowed to come. The time always arrives in the handling of matters of such importance when the "cost of expediency" becomes much higher than the cost of standing for sound principles. At the same time the managements of the railways should devote more time and more effort to improving the condition of those classes of their employees which are unorganized. Both considerations of expediency and of sound principle demand this. If the executive and operating officer would devote one-half the time to studying the needs and to working out improvements in the conditions of employment and in the wages of the unorganized employees that the labor unions force them to devote to studying and to working out improvements in the conditions of work and of wages of the organized employees the labor situation on the railways would soon present a much more favorable aspect.

A short-sighted, opportunist expediency has influenced the railway managements too much, and sound principles have influenced them too little in the past in dealing with the labor situation. In the long run adherence to sound principles is the truest expediency. If this had been recognized throughout the last 20 years conditions on the railways would be much more satisfactory now than they actually are.

#### NEW YORK, NEW HAVEN & HARTFORD

EVERYONE knows that the only way to operate a big terminal yard economically is to avoid congestion, even if to do so means placing embargoes or greatly adding to the facilities. The New York, New Haven & Hartford, and more especially the eastern end of the system, is like a vast terminal yard, complicated to the n'th degree by the passenger service which has to be performed in addition to the freight service. In the fiscal year ended June 30, 1916, the New Haven was taxed far beyond its capacity. At one time there was 57,000 freight cars on the New Haven and the Central New England, which is really the gateway to the New Haven from the Poughkeepsie bridge, and it is estimated that this was at least 12,000 more cars than could be handled satisfactorily.

Embargoes were placed, but not in time to prevent severe congestion. Naturally the New York, New Haven & Hartford management is exceedingly desirous of giving satisfactory service to its shippers with the hope of convincing them that if mistakes were made by a former management the present one is doing its best to rectify them. The pressure, therefore, that could be brought to bear on the management to make it put off placing embargoes longer than operating conditions justified was unbearably heavy. The small manufacturer who saw huge profits dangling before his eyes was going to get his fuel coal, if it was humanly possible, regardless of what the railroad company's agent told him about the difficulties of operation. In too many cases panic or selfish greed led to ordering more fuel or more raw materials than the manufacturer actually needed or had any possibility of unloading from the cars. At times the thankless task of trying to discriminate between real needs of shippers and greedy demands was thrust on the railroad, with the unavoidable result that there were innumerable cases where somebody thought they had a grievance.

Not only did the manufacturers of New England have to have coal in very largely increased quantities, but the New York, New Haven & Hartford itself had to buy increased quantities of coal at increased prices. All the New Haven's

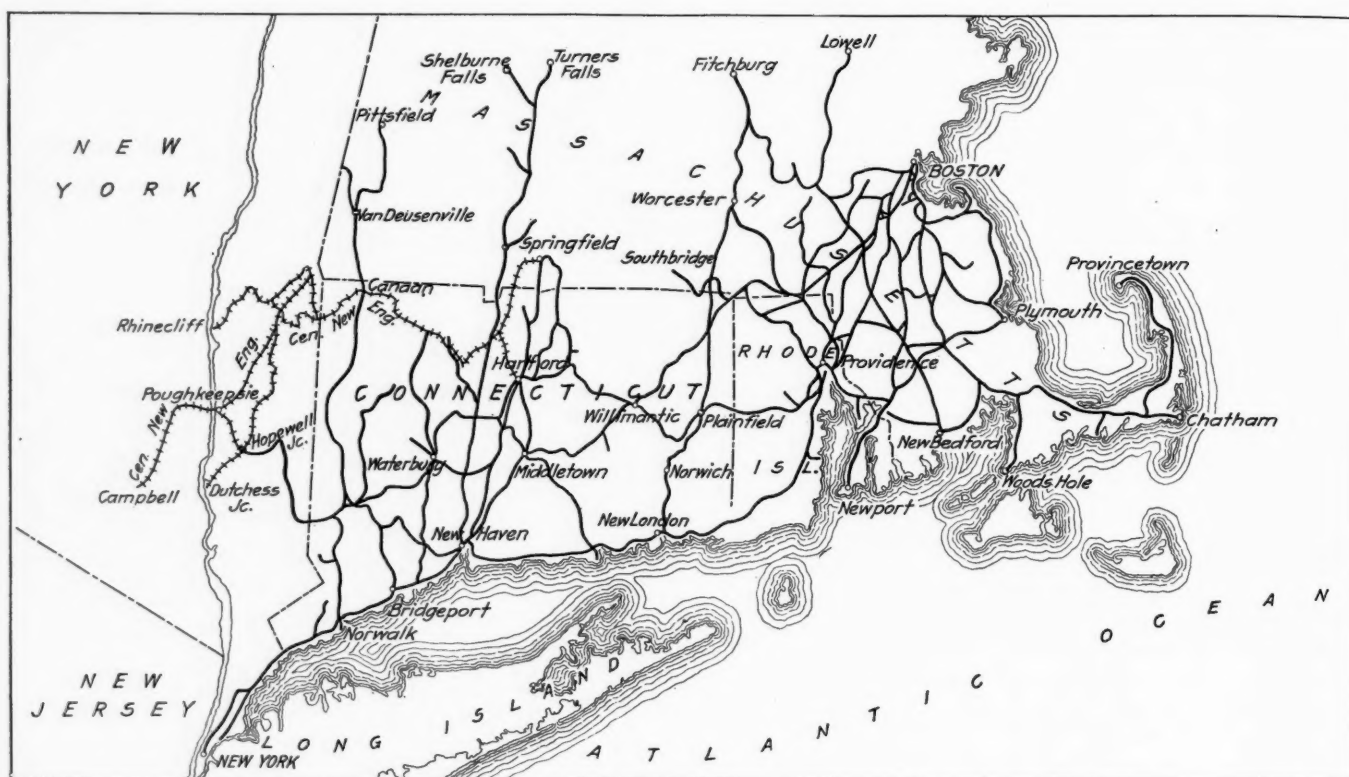
fuel coal has added to its cost at the mouth of the mine the freight rate charged by some other road, whereas a road like the New York Central or the Pennsylvania gets nearly all of its fuel coal on its own line and on much of this includes in fuel cost no freight charge on the coal.

Labor was in demand in New England as at no time in the last decade. Railroad employees naturally felt a desire to go into other businesses when they heard of the wages being paid by munition plants and other manufactories. The New Haven had to deal with 57 strikes during the year at a time when business was overcrowding physical facilities and manufacturers were desperately clamoring for the movement of their goods. Superimposed on all this there was a series of very severe storms in December, 1915, which for days absolutely tied up freight business and for a while stopped even passenger business.

The New York, New Haven & Hartford's earnings in the fiscal year ended June 30, 1916, were the greatest in its his-

Far more serious, however, than the increased maintenance expenses was the increase in transportation expenses. These expenses amounted to \$28,424,000 in 1916, an increase of \$4,465,000, or 18.64 per cent. Besides the increases in transportation expenses caused by congestion there was \$2,701,000 spent for hire of locomotives and passenger and freight equipment, an increase over the previous year of \$2,103,000.

Notwithstanding all its difficulties, the New Haven had a net income of \$4,316,000 for the fiscal year ended June 30, 1916, an increase over the previous year of \$2,008,000, and an increase over 1914 of over \$4,000,000. To revert, however, for a moment to operating conditions before discussing the financial affairs of the company. There were 34 locomotives retired during the year and 28 added, leaving the company with 1,150 locomotives, of which 77 per cent were in good condition, 7 per cent in fair condition, 12 per cent in shops and 4 per cent awaiting repairs. The total number of locomotives which received general overhauling and heavy



The New York, New Haven & Hartford and Its Subsidiary the Central New England

tory, amounting to \$76,312,000, an increase over the previous year of 16.72 per cent and comparing with the largest previous earnings, \$68,614,000 in 1913. For the first five months of the fiscal year the New Haven was handling its increased business economically and there were prospects of a fine showing for net. The storms of December were the first blow, and congestion once fastened on the system could not be cast off. Maintenance expenses were increased by the difficulty of getting labor, in maintenance of way by the storms and in maintenance of equipment by the necessity for using light locomotives and pressing into service every available car. Maintenance of way cost \$8,779,000 in 1916, an increase of \$1,050,000 over the previous year. As a matter of fact, however, there was included in this and in the maintenance of equipment charges a total of \$1,066,000 which was not actually spent because of the inability of the company to get materials and labor, and this amount is being carried forward into the present fiscal year as a reserve. Maintenance of equipment cost \$10,860,000, an increase of \$1,079,000 over the previous year.

repairs was 657, a smaller number than the New Haven would probably have put through the shops if it could have gotten labor and materials. The freight car situation was apparently better than the motive power situation. At the end of the year there was only 3.73 per cent of total freight cars owned in need of repairs.

The average trainload in 1916 was 352 tons, an increase of only one ton over the previous year. The average loading per loaded car was 16.27 tons, an increase of 0.68 tons. The storms had something to do with the inability to show heavier train loading, and congestion was also a factor. The much larger proportion of l.c.l. freight carried makes it surprising that any increase in the average loading per loaded car should be shown at all. The total tonnage of all freight carried in 1916 was 28,285,000, or 4,433,000 tons more than in 1915. Of the 1916 tonnage, 17.35 per cent was furnished by merchandise (l.c.l. freight), the total being 4,907,000 tons, and the increase as compared with the previous year, 1,188,000 tons. The bituminous coal carried totaled 4,237,000 tons in 1916, or 14.98 per cent of the total



carried, and was greater by 700,000 tons than the bituminous coal tonnage in 1915. The tonnage of manufactures in 1916 was 6,578,000, or 23.25 per cent of the total tonnage of all commodities, and an increase over the previous year of 1,272,000 tons.

Passenger business showed a remarkably large increase. Total passenger revenue amounted to \$29,621,000, an increase of \$2,610,000, or 9.66 per cent. Passenger density on the New Haven in 1916 was 797,000, and the average number of passengers per revenue train-mile was 102. The average receipts per passenger per mile were 1.885 cents, and the average receipts per revenue train-mile, including mixed trains, was \$2.24992. President Elliott says that more than half of the passenger trains run by the company earn less than one dollar a mile, and many earn less than 25 cents a mile. This gives a very good idea of the difficulties which the New Haven has in its passenger service. Half of its trains average less than 50 passengers, many less than 12, and yet the average for all is over 100, so that the average on a great many trains must be in the neighborhood of 300. The New Haven gets it going and coming. It has to run local trains where there is no business to justify their cost and it has to handle immense crowds of travelers on its main line and at New York and Boston where it is most cramped for facilities to move its freight.

The New Haven operating problems have not been solved yet, and, as President Elliott says, "The experience of the year indicates that . . . the plant of the company must have substantial additions to it if it is to perform the present business satisfactorily and economically and to be ready to do the constantly growing business of New England." In March of this year E. J. Pearson, who had been with Mr. Elliott when he was on the Northern Pacific, was appointed assistant to the president to expedite improvement work, and President Elliott gives a list of some of the more important work that must be done as soon as money and men can be obtained. This includes the expenditure of \$5,900,000 for freight terminals; \$9,300,000 for equipment and shops, including 53 heavy steam freight locomotives and 60 heavy electric locomotives for both freight and passenger service; \$3,400,000 for heavier bridges, including the Thames river bridge at New London, and the Connecticut river bridge at Hartford, and \$2,800,000 for additional main tracks and sidings.

The financial difficulties of the New Haven are not all over with yet, but substantial progress along the right lines has been made. A striking indication of this is the fact that \$27,000,000 5 per cent one-year notes, due May 1, 1916, were paid by a new issue of one-year 4½ per cent notes, due May 1, 1917, for \$25,000,000 and \$2,000,000 in cash. The loan, with interest, discount and commissions, made in 1915, cost the company 7¼ per cent. The refunding of this loan mentioned above in 1916 cost the company but 4⅞ per cent. During the year the suit brought by the New Haven against the Billard Company in connection with the profit made by that company when it temporarily took over from the New Haven a controlling interest of the Boston & Maine was settled by the Billard Company paying to the New Haven \$1,250,000, and this amount was used to reduce the book value of the New Haven's investment in the Boston Railroad Holding Company, which is the company which took over the controlling stock of the Boston & Maine.

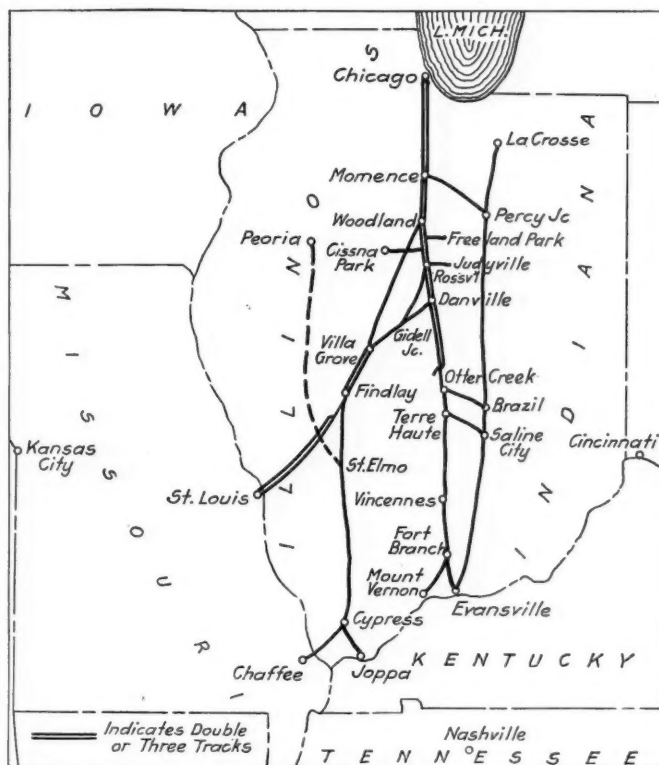
The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916.	1915.
Average mileage operated.....	2,005	2,003
Freight revenue .....	\$37,448,021	\$31,179,319
Passenger revenue .....	29,620,567	27,010,799
Total operating revenue.....	76,311,653	65,379,264
Maintenance of way and structures.	8,779,166	7,729,241
Maintenance of equipment.....	10,859,656	9,780,330
Traffic expenses .....	470,278	473,368

Transportation expenses .....	28,423,557	23,958,702
General expenses .....	1,756,431	1,611,243
Total operating expenses.....	51,078,358	44,126,624
Taxes .....	2,856,255	2,743,921
Operating income .....	22,381,882	18,502,081
Gross income .....	28,841,113	24,357,133
Net income .....	4,315,757	2,307,971

## CHICAGO & EASTERN ILLINOIS

IT seems hard to believe that the St. Louis & San Francisco was ever willing to guarantee 10 per cent on the \$7,218,000 common stock of the Chicago & Eastern Illinois and 6 per cent on its \$11,070,000 preferred to get and to retain control of that company. As an investment the venture was a failure. In only two years in its history did the Chicago & Eastern Illinois pay 10 per cent on its stock, and in the fiscal year ended June 30, 1916, a year of exceptional prosperity and industrial activity, the Chicago & Eastern Illinois earned only a few thousand dollars over and above interest charges. The St. Louis & San Francisco ceased to carry out the provisions of its guarantee,



The Chicago & Eastern Illinois

of course, when it went into the hands of receivers, and at the same time a receiver was appointed for the Chicago & Eastern Illinois. It was not until after the line had been operated for more than a year that many people realized that the Chicago & Eastern Illinois was not the prosperous railroad which it had generally been considered to be.

The road runs from Chicago south through Terre Haute, Ind., to Evansville, with a line also to St. Louis and to Chaffee, Mo., crossing the Mississippi at Thebes, a few miles north of Cairo. In all, the company operates 1,136 miles of railroad, of which 335 miles is double track. It is a road having a low ton-mile rate—5.3 mills in 1916, and a low passenger-mile rate—1.87 cents in 1916. There is extremely keen competition on much of the passenger business and on quite a large part of the freight business, and while the Chicago & Eastern Illinois is successful in getting more than its share of the passenger business between

Chicago and St. Louis and fully its share of competitive freight business at most points, the keenness of the competition makes for expensive operation.

The total tonnage of all revenue freight carried in 1916 was 15,287,000, an increase as compared with the previous year of 20.06 per cent. The average length of haul was almost the same in 1916 as in 1915—153 miles. Of the total tonnage carried in 1916, 61.31 per cent was products of mines, the two principal commodities under this head being bituminous coal, which furnished 52.27 per cent of the total revenue freight tonnage, and stone and sand, which furnished 7.23 per cent of this tonnage. The increase in the tonnage of bituminous coal was 21.30 per cent, but in stone and sand only 5.28 per cent. The tonnage of manufactures carried in 1916 amounted to 2,018,000, or 13.20 per cent of the total revenue tonnage. This compares with 1,387,000 tons of manufactures carried in 1915, which was 10.89 per cent of the total tonnage in that year. The increase in the year 1916 as compared with 1915 was 45.52 per cent.

Total operating revenues in 1916 amounted to \$16,698,000, an increase of 18.4 per cent over 1915, the largest total operating revenue in the history of the company. Operating expenses amounted to \$12,680,000, an increase over the previous year of 10.5 per cent, making the operating ratio in 1916 75.94, and in 1915, 81.40. Previous to 1913 the operating ratio of the company had been 71.63 in 1912, and prior to that less than 70.

Mileage and loading statistics for 1916 show relatively large gains and besides being good as compared with former years' operations of the same property, are good as compared with other roads doing a somewhat similar business. With an increase of over 20 per cent in ton mileage handled, there was an increase of a little over 11 per cent in freight train mileage. The average trainload was 663 tons in 1916, an increase of 56 tons as compared with the previous year. The average number of tons per loaded car was 29.01 as compared with 27.58. The proportion of loaded to empty cars was about the same in the two years. Transportation expenses in 1916 amounted to \$5,721,000, an increase of 7.6 per cent. There was quite a notable saving made in payments for loss and damage to freight. These payments totaled \$145,000 in 1916, a decrease as compared with the previous year of 15.5 per cent.

On maintenance of way the company spent \$2,284,000 in 1916, or 3.1 per cent more than in 1915, and on maintenance of equipment the company spent \$3,849,000, an increase of 22.4 per cent. Most of the items under maintenance of way show larger expenditures for 1916 than 1915, and the fact that the total is only 3 per cent greater in 1916 than in 1915 is because there was a large cutting down of expenditures for ties, the total in 1916 on this account being \$439,000, or 35 per cent less than the amount spent in 1915. It is probable that in part labor shortage was the governing factor in the smaller tie renewal. In maintenance of equipment the outstanding feature is that whereas previous to 1916 the Chicago & Eastern Illinois had been charging for depreciation of its equipment only  $\frac{1}{4}$  of 1 per cent, during the year 1916 the charges were at the rate of 2 per cent. Two per cent is low, and, of course,  $\frac{1}{4}$  of 1 per cent was a mere nominal charge to technically comply with the rules of the Interstate Commerce Commission.

With its present rates and funded indebtedness there is little prospect of the Chicago & Eastern Illinois earning much profit for its stockholders. The road is not heavily capitalized. Its outstanding funded indebtedness is at the rate of \$59,136 per mile, and its stock at the rate of \$18,180 per mile. What the company needs and needs badly is higher passenger rates and higher rates on manufactures and other competitive business.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Average mileage operated.....	1,234	1,234
Freight revenue .....	\$12,471,388	\$10,232,826
Passenger revenue .....	2,907,481	2,723,926
Total operating revenues.....	16,698,404	14,100,772
Maintenance of way and structures	2,284,191	2,215,871
Maintenance of equipment.....	3,849,471	3,146,073
Traffic expenses .....	302,563	279,390
Transportation expenses .....	5,721,359	5,315,560
General expenses .....	455,673	438,744
Total operating expenses.....	12,680,319	11,477,869
Taxes .....	703,457	627,200
Operating income .....	3,309,647	1,994,230
Gross income .....	4,387,149	2,584,748
Interest and rentals paid.....	1,463,551	2,131,948
Interest unpaid .....	2,837,018	2,262,096
Surplus if all charges had been paid..	86,579	1,844,497*

\*Deficit.

## NEW BOOKS

*Proceedings of the American Railway Engineering Association.* 6 in. by 9 in., 1,400 pages. Illustrated. Bound in half morocco, cloth or paper. Published by the American Railway Engineering Association, Karpen Building, Chicago. Price, half morocco, \$7; cloth, \$6.50; paper, \$6.

The volume this year contains fewer pages by 172 than last year, but owing to the larger number of inserts and the necessity for using heavy paper for a large number of plates the volume is actually thicker than the preceding one. Of the total number of pages 780 are devoted to reports, 144 to discussions and 467 to monographs. Much work was done by all of the committees but owing to the custom of continuing the studies from year to year the reports of a number of the committees were in the form of progress statements that did not indicate the true value of the investigations being made. In the case of the committee on iron and steel structures, on the other hand, the report given this year represents a digest of a study extending over a long period and for that reason constitutes one of the most valuable portions of the proceedings. Definite recommendations are made relative to secondary stresses, impact and working stresses. The most important action taken by the association in its convention last March was connected with the report of the Committee on Rules and Organization covering the standard clearances for bridges and other structures to afford safe operation for trains. The large amount of discussion which this created is particularly interesting. The report of the Committee on Rail contains the annual review of the rail failure statistics; the report on internal transverse fissures; a study of 108 rail failures by W. C. Cushing, involving a large number of illustrations; and an account of the nick and break test in the inspection of steel rails by Robert W. Hunt and C. W. Gennet, Jr. Part 2 contains a number of very comprehensive studies including "Special Steels" by W. C. Cushing; "Ballast Tampers for Railway Ties" by George W. Vaughan; "Standardizing of Maintenance of Way Work" and "Test of Track Bolts and Wrenches" by Earl Stimson; "Test of Douglas Fir Stringers" by H. B. McFarland; "Rise and Fall" by C. P. Howard; and "An Exceptional Flood" by J. L. Campbell. The book this year contains several series of unusually good illustrations, particularly those given in connection with the reports on causes of rail failures, and the nick and break test, and those with the monographs on special steel and on the testing of Douglas fir stringers.

**REMOVING PULLEYS.**—Removing pulleys that have been rusted on shafts is frequently a troublesome job, but can generally be accomplished by heating the hub with a charcoal fire or some other means. The hub will expand, and the wheel can be easily removed. Care should be taken, however, not to heat the shaft, for if it expands as much as the hub nothing is gained.—*Power.*



# Annual Congress of National Safety Council

## Fifth Annual Review of the Work of This Clearing House of Information—Lively Interest on Many Roads

THE National Safety Council held its fifth annual Safety Congress at Hotel Statler, Detroit, Mich., October 17, 18, 19 and 20; and the meetings of the Steam Railroad Section, held on Wednesday and Thursday, morning and afternoon, were attended by about 150 representatives of the sixty railroads which belong to the Council, and of a few roads which are not members. The chairman of the Steam Railroad Section is M. A. Dow (N. Y. C.); vice-chairman, J. M. Guild (U. P.); secretary, H. J. Bell (C. & N. W.), Chicago, Ill. The sixty roads now holding membership in the Council operate about 80,000 miles of line. The representatives of the lines which are members appeal for the co-operation of all railroad companies. The essential purpose of the Council is to serve as a clearing house for the exchange of information and, obviously, the greater the number of participants, the greater the value of the information.

### CHAIRMAN'S ADDRESS

Chairman Dow, in his opening address, set forth the high purposes of the organization and congratulated the members on the good results thus far attained. He made an appeal for still more vigorous progress. "Let us go on and dispel the notion that a railroad man's work is necessarily hazardous. Our ideal is cultivated carefulness; and it is the duty of this body to promote the realization of that ideal!

"The American railroads today are reasonably safe to work on and to travel on. The last annual statistics show that the number of passengers killed in train accidents was only one in 11,000,000. In the streets of New York City, 500 persons are killed annually, or one in 10,000 population. The safety of railroad work is indicated by the fact, shown in the last annual statistics, that but one employee was killed in a train accident for each 100 loaded freight cars moved a distance equal to seventeen times around the world."

The question of the responsibility for railroad accidents is always under discussion. Does it rest on the rank and file? Yes; so far as the individual employee is suitably instructed; but the instruction depends on some one above him; the superintendent, the yardmaster, the foreman—these are the men to see that employees know their duty. There is much faulty training by foremen. It is the duty of the man in authority to compel carefulness. Moreover, it pays. Look at the results. Specialized safety work, including co-operation and educational work, was generally adopted on the railroads of this country about five years ago. Comparing the last five years with the five years preceding, we find the following striking decreases (years ending June 30):

	1911-15	1906-10	Increase or decrease
Employees killed, average per year.....	2,569	3,572	D. 28 p.c.
Trainmen killed, one in.....	213	155	.....
Passengers killed in train accidents, one in.....	355*	183*	.....
Trespassers killed, average per year.....	...	...	I. 108
"Other persons," not trespassing, killed; average per year (mostly at grade crossings).....	1,997	994	I. 98 p.c.

\*Millions of passenger miles.

In closing, Mr. Dow urged his fellow members to renewed efforts in their noble and lofty work. "May you hook your spurs in the broncho 'Determination' and ride with steady, swinging lope across the range of things that are possible of attainment. Forget your failures, if failures you have had. Look up and see the rainbow smile—that beautiful rainbow of hope, beyond which lies the realm of ultimate success, a success, which in this work, is measured not by mere financial gain, but by all that is good in life. Success that is measured by the happiness of the home . . . by the friendships that are made and maintained among men through considera-

tion for the rights of others. And may you go forth from this Congress with an incentive for further accomplishment, inspired by that compelling slogan, 'For the sake of Humanity—Care and Thoughtfulness, with Education and Supervision to that end.'"

### REVIEW BY MR. RICHARDS

The first regular paper was on Prevention of Accidents, by R. C. Richards (C. & N. W.). Mr. Richards is the well-known father of the railroad Safety First movement, and his paper was a thorough and careful resumé of the lessons of his experiences of the last half dozen years. He called attention to the fact that the employers' liability acts, now so prominently before the public, have not reduced accidents. He showed up the weakness of the objection, sometimes voiced by employees, that the Safety First movement is some secret scheme for the benefit of the company. "But," says Mr. Richards to the employees, "you, and not the officers, are killed and injured; you and not the stockholders are the sufferers, primarily, from bad practices; suppose a company does start this movement for the purpose of saving money; very well, it must first save life and limb."

Mr. Richards presented striking comparisons between the railroad accident records of 1910 and 1915 (years ending June 30). In the earlier year the number of passengers killed was 450; in the latter 222. Employees killed in train operation, in 1910, numbered 3,418; while in 1915 this was reduced to 1,809, or almost 50 per cent.

Turning to the question of highway crossing accidents, the speaker suggested that at busy crossings the attendant should be sworn as an officer of the law. He alluded briefly to the trespasser problem, with which the railroads cannot cope without the aid of the municipalities. In 26 years the number of trespassers killed on American railroads has reached the enormous number of 118,654; and the number of injured is larger than this. Of these victims about two-thirds were citizens of the locality where they were struck.

A rough estimate may be made of the benefit of the Safety First movement by looking at the money cost of accidents. In the middle west the average cost of all accidents is something more than \$100 a case. Now, on the Chicago & North Western, in the six years, three months, to September 1 last, with a great increase in earnings and an increase of 450 miles in the length of road operated, the total number of persons killed has been reduced by 547, and the number injured by 16,941.

The one cause of accident which the safety departments have not yet considered, in a way commensurate with its importance, is the employment of unfit men. Except as the utmost care is taken in the recruiting of the forces the best efforts will always fall short of satisfactory success.

### THE SAFETY OF THE PASSENGER

G. L. Wright (C. St. P., M. & O.) read a paper on the American railroad passenger; What the railroads have done and are doing for his safety, and what he should do for his own safety. On the part of the railroads, figures cited by the speaker showed the important improvement made in the past few years, especially in the use of steel passenger cars. What has the passenger done to co-operate with the railway? Personal injuries are caused by people carrying large packages; standing on seats to reach up to the racks; opening vestibule doors; allowing children to play in cars, and other carelessness. The speaker advocated the painting

of a white safety line on station platforms to warn passengers to keep back from the track. He would have uniform notices posted in each end of each coach.

#### PREVENTION OF TRESPASSING

The duty of the public in the prevention of trespassing on railroads was the subject of a strong paper by A. A. Krause (M. K. & T.). This is the great American evil. The railroad has no duty towards the trespasser except to refrain from wilfully harming him. Placards and posted notices have little effect on most would-be trespassers; they will yield to nothing short of force; and this the railway cannot exert without offense. The speaker recounted the extensive missionary work of his road. Thousands of signs have been posted, circulars have been put into the schools, the bulletins of the National Safety Council have been spread broadcast, and hundreds of track walkers have been personally warned. Letters have been sent to parents of children found on the tracks. Citing examples of reckless conduct by high school girls and others, and the unjust comments of local papers when such trespassers were killed, Mr. Krause related an astonishing story of a fraternal organization known as "Quo Vadis," organized in 1907 by students of universities in the mid-western states, the purpose of which is to encourage riding on railroads without paying fare. In the beginning this was a movement of students, short of money, to get to a football game; but the movement flourished and it came to be the qualification for membership to have traveled at least 1,000 miles on railroad trains without having paid fare! These educated hoboes take pride in their lawlessness. The Quo Vadis Club of the University of Missouri was disbanded, after a member met with serious accident; but other clubs are understood to be still in existence. In one city of the middle west a lawyer of ability and standing, when a candidate for the office of prosecuting attorney, openly pledged himself not to enforce the law against trespassing on railroads.

To protect the people from epidemics and plagues we have to have health boards and health officers; the people cannot be depended upon to protect themselves; why not the same rule in regard to trespassing? The health officers act with vigor regardless of politics or the fear of antagonizing voters; at the first sign of danger they become alert and active. They have ample public funds. The courts back them up. Why should not this fatal epidemic of trespassing be treated in the same way?

*Discussion.*—In the discussion C. F. Merrill, superintendent of the Lehigh & Hudson River, took up the problem of getting local magistrates to deal more vigorously with persons arrested for trespassing. In most states the crime is a misdemeanor and the magistrates have large discretion. Trespassers should be divided into three classes: (1) train riders, (2) railroad employees, (3) employees of factories and other citizens. With the first class the magistrate has a simple problem, though sentences are often far too mild. With the second class the problem is comparatively easy if good and convenient paths are provided for use in going to and from work. The third class is the difficult one. On Mr. Merrill's road officers have at times been stationed at important points to turn back trespassers (without arresting them). This has had some good results. At factories the road endeavors to get the co-operation of the proprietors; and at schools the teachers are appealed to. Track foremen should be instructed to report to the superintendent the names of trespassers; and where they are persistent, the foreman should be persistent in reporting. The speaker recommended a federal law against trespassing.

D. A. Klumph (Pere Marquette) spoke of the prejudice of cities, and even of magistrates, against the railways. This often is so great that the only thing to do is to make a general appeal to the public; the National Safety Council has a

duty in this respect. Track foremen ought to have the power of arrest. The laws ought to provide for penalizing a prosecuting officer who does not do his duty. The speaker avowed his sympathy with the average pedestrian who, now, because of the automobile danger on the highways, takes to the railroad tracks as a measure of safety!

F. V. Whiting (N. Y. C.) told of the action of the Claim Agents' Association, and the statistics which it has gathered concerning trespassers. Members of that association desire to have a federal trespassing law. They propose to present a memorial to the American Railway Association. On motion of Mr. Whiting, the meeting voted to co-operate with the Claim Agents' committee on trespassing in the promotion of publicity.

#### HIGHWAY CROSSING ACCIDENTS

How to reduce the number of accidents at crossings, was the subject of a paper by John S. Rockwell (B. R. & P.). For the present the crossing is a necessary evil. To abolish the crossings on the Buffalo, Rochester & Pittsburgh would cost an average of \$50,000 each. It is the duty of railroads to resist to their utmost the establishment of new crossings. The railroad officer must not, too readily, assume that the blame for accidents rests wholly on the wayfarer. Trainmen need to be cautioned about backing cars over crossings. The rule not to block crossings should be strictly enforced; sometimes neglect in this matter contributes to accidents. Signs should be standardized. The attendant at the crossing should not give proceed signals to persons on the highway except, perhaps, by a motion of the hand, his flag being furled. The speaker would like to see a federal act requiring the universal use of signs to be lettered "Stop, Look and Listen." Drivers of heavy motor trucks should always have with them flags or lanterns, or whatever is necessary to stop a train if they get stuck on a crossing.

*Discussion.*—In the discussion on this paper, C. M. Anderson (N. C. & St. L.) endorsed the recommendation that discipline of railroad employees be more carefully attended to. Many locomotive runners are not careful to make the whistle sounds long enough or loud enough. It is second nature for an engineman, if he sees danger at a crossing, first to shut off steam and then sound the whistle; but as the damage will probably be no greater at 40 miles an hour than at half that rate, it would be better for him to sound the whistle first. It is to be hoped that the present movement for uniformity in crossing signs will make rapid progress. One city on the speaker's road requires the use of a white flag or a green light to stop trains, and red is the signal to stop street traffic and to indicate all right for trains! Mr. Anderson proposes to warn automobile drivers by means of placards which he will circulate, to be posted in garages and other places where motorists will see them.

J. C. Rose (Penn.) told of his experience with cautionary fixed signals on the highway. The West Jersey & Seashore was the first road to put up a signal of this kind. At first it was set 1,000 ft. from the track; then the distance was made 500 ft. and another was fixed 300 ft. from the track. It was found that many motorists went faster rather than slower when they saw one of these signs, and his road concluded to use the sign only at crossings protected by gates. The speaker thought, however, that if the cautionary signal were universal motorists might be trained to heed it. The State of New Jersey has ordered the establishment of these cautionary signs generally. The Long Island road has put up a large number of them.

Mr. Dow said that all crossing attendants on the New York Central lines now use the hand disks in place of the flags formerly used.

G. L. Wright (C. St. P., M. & O.)—Some of our crossing watchmen have noted the license numbers of the cars of reckless drivers, and letters are written to such drivers. Our



road has put up 400 cautionary signs; usually they are set from 300 ft. to 400 ft. from the track. These have white letters on a red ground. Excellent results have followed.

#### MEMBERSHIP OF SAFETY COMMITTEES

"How Should the Members of Safety Committees be Selected and for What Length of Time Should They Serve," was the subject of a paper by E. R. Scoville (B. & O.) read by J. T. Broderick. Rotation in office is important. On the Baltimore & Ohio the term has been shortened to three months, with good results. The appointee is notified one month ahead and thus qualifies himself to be a useful member at his first meeting. It is not well for the retiring member to nominate his own successor; it has been found best to have the selections made by the division chairman. To find who are the useful men and who are not, it is important to get all members to express themselves on every subject that comes before the committee. Retiring members are formally thanked for their service. Many members will neglect to report bad practices because they fear the odium of the talebearer; again a man whose term extends over many months may become apathetic. Members on the general committee on the B. & O. ceased regular attendance on district meetings and have held a number of mass meetings at important points. Thousands of employees have attended these meetings. The motion picture entertainment, "The House that Jack Built" has elicited great enthusiasm; over three thousand persons saw it at one place. This show is given at noon for shopmen and at midnight for night workers. Members of the safety committees are paid regular wages for the time spent in committee work.

The benefits of the short term are that more men are educated; in three months a member has had time to report the bad practices which have come within his own knowledge; he retires while still enthusiastic; a larger number of employees are given the chance to rub elbows with the officers.

The safety specialist should do his best to keep appointing officers interested in this idea; then the officers may be expected eventually to reject a careless man as surely as they now reject liquor drinkers.

*Discussion.*—In the discussion on this paper A. W. Lee (O. S. L.) coincided in the view that short terms are desirable. His road has reduced the time from twelve months to three months. If a committeeman is found to be skeptical it is highly important to convert him; for when converted he becomes one of the strongest supporters.

H. A. Bullock (Brooklyn Rapid Transit Company) told of his experience in teaching safety first by the use of lantern slides. He has a catalogue of available slides, and he exchanges pictures with other companies. The secretary of the National Safety Council will catalogue the slides and films in the possession of the members of the electric railway section and these can be made available to steam roads for the asking, or at the most at the cost of reproduction. It is important to have constant novelty. The first cost of slides is rather high; but roads desiring to use this method and to have pictures of their own can have duplicates of slides made for 50 cents (colored) and 25 cents (uncolored).

G. L. Wright emphasized the importance of having the division superintendent serve as chairman of the division committee. On his road the other members are chosen by votes of their fellow employees in each department. Replying to a question, he said that 75 per cent of the men participate in this voting. On the New York Central and on the Baltimore & Ohio, the superintendent is the permanent chairman of the division committee.

#### RELATION OF THE COMPANY TO THE SAFETY FIRST ORGANIZATION

This was the subject of a paper by J. M. Guild (U. P.). Safety depends on supervision, and supervision on the officers.

The lukewarm officer *must* be converted; the officer who is "too busy" to give attention to this matter will be found to be the one who has the most accidents. The first desideratum in this, as in other important affairs, is to have level headed leaders, men who are naturally adapted to leading other men. Every member will testify that his best meetings have been those where the officers took active part. The speaker outlined the qualities of the ideal officer: firm and fair, not influenced by personal considerations, able to commend without flattery and to administer discipline without humiliation.

Meetings must be guided by an officer; and he must take care to keep the most important subjects uppermost. The report that there is a hole in the station platform at X, or that a hand railing ought to be put up on Bridge 115, may be important, but these items are secondary, compared with the fact that two switchmen have just lost their feet by kicking drawbars, or that derailments have occurred because men threw switches under the cars; or that five shopmen have suffered from not wearing goggles. Education and instruction are the highest purposes of the meetings and to this end these important features must be kept at the front. "An officer coming in daily contact with his men can do more real constructive safety work and produce more results than all of the efforts along other lines combined. The very heart of the safety movement is centered in the officers. They can make it a huge success or a dismal failure, and in neither case is there any great effort required on their part. The proper relation as between them and the safety organization is most important."

*Discussion.*—C. T. Banks (Erie):—Speaking of what are the more important matters, there are some situations where stricter discipline would be beneficial. The man who kicks a drawbar ought to be punished by ten days, instead of having a mild talking to. The man who is responsible must be made fully to realize his responsibility. A shop foreman who had fourteen injuries in a certain month, where another shop had only three, must be told that it is his plain duty to cut his record down to three. If he is the right kind of man this arouses him to his duty. On the Erie a brakeman who breaks a plain safety rule, is required to go around with a record of his behavior and get fifty of his fellow workmen to listen to it and to sign their names. This may take him five or ten days, and the experience will burn the facts into his mind.

S. S. Morris (Illinois Central) gave a brief account of the practice on his road. Hearty co-operation prevails, and the different departments work together, even the traffic department taking an interest. Daily reports are sent to headquarters, and where there seems to be an increase in personal injuries, a letter is at once written to the superintendent of the division where special attention may be needed. If friction develops in a committee, the trouble is attacked at once.

D. A. Klumph (Pere Marquette):—The officer who investigates an accident ought to go further back; sometimes it will be found that the crew responsible for a bad practice had indulged in the same bad practice before, and that their superiors knew of it.

#### INJURIES TO TRACK MEN AND BRIDGE MEN

The best way to eliminate the causes of these accidents was the subject of a paper by C. T. Banks (Erie). Ninety per cent of these injuries are due to the negligence of the victim or of his fellow employee. Negligence usually means ignorance. Removing this ignorance is specially troublesome at present because of the large numbers of new men not speaking English. Our best men have gone to Europe or have got better paying places at home. Of trackmen killed, the great majority are struck or run over by trains. These accidents usually occur on double track or four-track lines. The Erie employs watchmen to warn trackmen, but sometimes it seems

as though there is need of a special watchman for each laborer. A book of safety precepts has been issued, printed in several languages; and foremen, speaking the language of the workmen, have been required to see that the books are read and understood. Among bridge men the percentage of accidents is low. The main reliance must be on the foremen.

*Discussion.*—In the discussion on this paper, L. F. Shedd (Rock Island) called attention to the fact that many men who know enough to be careful, nevertheless fail because they do not have any fellow-feeling for their fellow employees. Even foremen often fail at this point. The foreigner is not always so ignorant as we think. The foreman must be trained. He must be made to take a personal interest; to talk with his men and to set a good example. Make him understand that he has a personal accountability for each injury among his men.

Mr. Shedd was followed by a number of members who said that the rule for trackmen on their roads was that when a train approaches, the men shall step clear of all tracks. W. C. Wilson (D. L. & W.) told of a large reduction on his road in the number of trackmen killed (struck or run over by trains) by persistent educational work with the heads of departments.

S. G. Watkins (B. & M.):—We found that in many cases trackmen struck and run over by trains had not had a good and sufficient warning. Variety in warnings is an element of danger. We ordered the adoption of one standard formula, three words—"Clear the track."

The discussion here turned to the use of whistles. In most situations on busy roads the warning by word of mouth is out of date. Moreover, the whistle should be shrill, and one single sound should be the rule. On the New York Central, where there are four main tracks, the watchman makes one sound for track No. 1, two for track No. 2, three for track No. 3 and four for track No. 4. On the Union Pacific the use of the whistle has been discontinued, because where a gang of men is scattered along a considerable length of track, and there is a strong wind, the whistle warning has sometimes been ineffective. H. S. Balliet (N. Y. C.) after six years' experience and study, had concluded that the desideratum was to have a whistle of the right quality, sufficiently shrill. The duty of providing suitable and sufficient warnings should be placed on the roadmaster or the division engineer. Mr. Balliet, like most others, has had to employ many green men in track work of late; and the education of these men in safety habits is a work that has to be constantly kept up. In the Grand Central Terminal yard, New York, much of it covered over and dark throughout the 24 hours, the management of the warnings to prevent men from being run over has become a fine art. Keeping the men free from fear, so that they will be efficient at their work, is a matter requiring constant attention. Some of the gangs have to have two whistle-men. In this terminal there are 685 pairs of switch points and the man who does the warning has to watch the points affecting his work, with constant care so as to know on which track a train movement is to be made.

#### SHOP ACCIDENTS

This was the title of a paper by B. C. Winston, Wabash. The shopman gets used to danger and the risks of his work have to be constantly reiterated. However, Safety First has made great progress in shops. The shop foreman has the advantage of being constantly in touch with his men, and should make a good record. The speaker described the situation in the large new shops of the Wabash at Decatur, Ill. It is very desirable to have young men on the safety committees. Some of the veterans need a good deal of explanation and persuasion to get them to understand the needs of the younger element. After the safety propaganda had been well established at Decatur, foremen were brought there

from other shops on the system and these carried back the gospel of safety to their own men. When a serious injury happens on the Wabash, there is a very full investigation and discussion, and all the workmen are made to understand the lesson.

*Discussion.*—This dealt largely with the use of goggles. Mr. Dow had visited a shop, not a railroad shop, where even visitors were required to put on goggles before entering the workrooms. Most of the members seemed incredulous as to the feasibility of enforcing such a strict rule in the railroad service.

C. T. Banks:—If a workman came into one of your shops barefooted, he would at once be reprimanded and sent back; why not be equally strict in the matter of goggles? Since May 1, last, we have had fifteen cases where goggles are known to have prevented injury to eyes. On the Erie, goggles are used by the men who draw the fires from locomotives and by boiler makers. Condensation of moisture on the glasses has made some trouble, and we have now adopted a special design where the glass stands out an inch from the man's face. For workers at electric welding we have a special mask which takes out the infra red and ultra violet rays; wearing this, the workman can use both hands at his work.

On the Union Pacific, the Pennsylvania, the Erie and the New York Central goggles in which the glasses are ground to fit defective eyes are in use. On the Rock Island, the use of goggles has not been made compulsory, but two thousand of its men are wearing them. The Pennsylvania, to conciliate objectors, allows employees to use any make of goggles which is satisfactorily protective. In the shops of the Pullman Company, the men were long allowed to make their own choice, but after considerable inconvenience the company decided to standardize three designs of frame. On the Union Pacific, a glycerine compound is used to get rid of troubles from condensation of moisture.

#### NON-TRAIN ACCIDENTS

F. M. Metcalf (N. P.) read a paper on the question "How shall injuries resulting from train operation, other than collisions and derailments, be prevented?" He presented a careful enumeration of the requirements of plant and personnel necessary to provide the greatest safety. Trainmen must not close the vestibule too soon on starting away from a station. Greater care should be exercised in selecting men for crossing watchmen. Those who hug the fire in the shanty are likely not to be efficient. The watchman must understand the English language well enough to warn people on the highway and to testify intelligently at inquiries. Enginemen and firemen approaching a crossing should be on the lookout; the excuse that it was necessary just at that time to attend to the injector or the fire should not be received. Mr. Metcalf has issued a warning to automobiles, and the secretary of the state of Minnesota has agreed to circulate it with his annual licenses. A code of safety precepts issued by the Northern Pacific has been combined with a little pocket book which the employee (in the train service, engine service and yard service) uses for recording his time worked. This insures attention to the book. Mr. Metcalf would have examination on the safety rules carried out with the same care as that on train rules. Other books of the same character as the one mentioned are to be furnished for shop men and for station men.

An important element of accident prevention is to keep statistics up-to-date. The rule forbidding men to go between cars should be rigidly enforced. The Northern Pacific has a red card, 10 in. x 15 in., to be tacked on the side and on the roof of a freight car which has a loose handhold. For the safety of car repairers, Mr. Metcalf would provide (a) the blue signal, (b) a special lock for the switch leading to the repair tracks and (c) a clearance card, the card to be



issued by the repairman when he has finished his work. On the Northern Pacific, during the past three years, no man has been injured on an established repair track.

*Discussion.*—In the discussion on this paper, A. T. Woodruff (Virginian) read a brief paper sent by J. Berlingett, assistant general manager of the Virginian. He emphasized the importance of selecting the right kind of men. Usually the village lad is worth a carload of the so-called experienced trainmen whom the employing officer is liable to favor when he is in desperate need of additional trainmen. Hiring men in haste is a bad practice that ought to be abolished. Why not examine men for promotion when there is time to do the job properly? An overworked officer is not the man to make a good examination; the work must be done deliberately and by a man who makes it his specialty. The writer protested against the unbusiness-like character of some safety publications. These magazines and pamphlets are not the place for jokes and other miscellaneous matter.

#### HOW TO MAKE MEETINGS INTERESTING

W. C. Wilson, claims attorney of the Delaware, Lackawanna & Western, read a short but witty paper on this subject. Some of these meetings are no pleasanter than funerals. A dead or somnolent committee cannot have a live meeting; a thoughtless committee cannot have an intelligent meeting. Enthusiasm is engendered only by men who believe in their work. The superintendent should be the leader; but if he sits at his table with a preoccupied air he is a failure. Officialism must be put into the background. The chairman must curb unprofitable discussion and yet not discourage freedom of expression. He must show that he is the best safety first man on the committee; greet the members cordially, exercise friendly tact in drawing out the best that is in each man, and for those with whom thinking and smoking are coincident he must provide cigars within easy reach. It is a good thing to have a dinner once in a while, possibly sometimes having the men bring their wives. Committee meetings do not run themselves. The secretary must be a driver. General officers should occasionally attend the division meetings as should the members of the central safety committee. Persons outside the railroad service can be invited occasionally to address the committee, especially former members.

Concrete examples from the experiences of the preceding month must always be a main topic; they always make a live topic. As a rule, men do not like to discuss the unsafe practices of their fellow employees, especially in the presence of their officers. Where necessary or desirable, employees should have an opportunity to discuss matters by themselves; sub-committees of employees may be appointed to discuss dangerous practices in their own way.

"The life-blood of the whole Safety First organization flows out from these committee meetings. Their interest must be maintained if there is to be efficiency all along the line. Its members, both officers and privates, must be made to feel the weight of responsibility which is theirs; that if they shirk that responsibility or fail to measure up to the demands of their high calling, if they are unwilling to be prophets of the new faith and to stand for a time as sentinels to point the way of Safety, then they should make way for others who have a clearer vision, warmer hearts and stronger and more willing hands for the work which is set before them."

*Discussion.*—H. J. Bell (C. & N. W.):—If our meetings are not satisfactory one of the reasons is that safety-first has become an old story. Every man who is not energetic must be warmed up. A man who looks on the chairman or the superintendent as the whole committee is all wrong; he must be converted to the right view. Members must remember that when in a committee meeting they are not brakemen, station agents, or shopmen; they are safety-committee-men. This is an honorable service. All employees must be made to

understand that the members of such committees are to be respected. All division officers must understand that the safety department is an important department. There is no more important day in the month, on any division, than the day on which the safety committee meets. The North Western keeps up a friendly rivalry among divisions by awarding banners. Other rewards are given and vacations are granted for good work. The general safety committee should give publicity to good papers read at committee meetings. Committees of shopmen and committees of operating men should send delegates, each to the meetings of the other. On all important matters before a committee a formal vote should be taken. It is important that every member keep well posted as to all accidents that come before the committee.

R. S. Jarnagin (N. Y. C.) outlined the essentials of a meeting. Mr. Jarnagin is constantly on the road, traveling, in the interest of the safety work, from one division to another, of the New York Central lines, thus keeping all divisions well informed of what is going on elsewhere. The social feature of meetings is important. The mental attitude of the superintendent is an essential thing in the leadership. As superintendents have many other things to do they may overlook details; therefore the secretary or some other member of the committee must make committee work his first business. The most interesting topics, at times, are those which have been brought from other divisions. All employees must be encouraged to make suggestions, and even points which are not practicable must be respectfully considered, and reasons for rejection must carefully be made known.

C. T. Banks (Erie):—One of the best stimulants to good meetings is a fee. On the Erie the shop committee men receive \$5.

Other speakers gave a great variety of experiences. On the New York Central one superintendent, to show his appreciation of good suggestions, proceeds at once, on the spot, to dictate the letter necessary to have the suggestions carried out. On the Chicago & North Western, the superintendents, who are chairmen, sometimes put a temporary chairman in charge of the meeting, notifying him a month in advance; this educates the men in the practice of presiding. A number of roads give annual passes to the men. On the Chicago & North Western these passes have the safety emblem on them. On the New York Central an effort is made to have, at each meeting, one paper which shall be the chief feature. Isaiah Hale (A. T. & S. F.) when he asked for papers, received an avalanche. The sifting of papers and selecting the best is an essential element. On the New York Central, the best papers are printed and sent to the 1,200 members of the sixty committees on the New York Central lines. Mr. Dow inspects the minutes of the division meetings on those lines and if he finds evidence of dullness he calls somebody to account.

#### THE NATIONAL SAFETY COUNCIL

G. S. Locker (D. & I. R.) read a paper on the National Safety Council; what service does it render to its members; what is it doing for the public? The speaker gave an outline of the constitution and activities of the Council and appealed to railroads to support it. Each week a bulletin is sent to its members and these help to instruct two and one-half million workmen. By this process good seed is scattered broadcast; and it is impossible to imagine the good results that will be seen in the future. Railroad men must not despise the bulletins dealing with affairs in other industries. The railroad shopman, reading of incidents and experiences on a farm, is quite likely to be broadened thereby. The Council is doing a real safety-first work in educating the public in regard to trespassing.

Mr. Locker was followed by W. H. Cameron, secretary of the Council, who told more in detail of its activities. He has an information bureau and a large library and attends

to many inquiries every month. Tons of pamphlets have been sent out. He can get an answer any day, to almost any question pertaining to the business or trade of the constituents of the Council. The dues of railroad companies for membership are graduated, according to length of line, from \$10 for 100 miles to \$100 for 10,000 miles. A road paying \$100 receives twenty copies of each bulletin and these can be sent, if desired, to twenty different addresses.

#### MISCELLANEOUS BUSINESS

Mr. Locker's paper was the last one on the program, and following its discussion there was an informal exchange of views on numerous topics. The difficulty of getting good men for workmen on the tracks or in other departments where skill is not required is now a serious question on many roads. Men who can get jobs quickly elsewhere cannot be disciplined easily. The businesslike way is to engage new men only on probation. Mr. Hale (A. T. & S. F.) described his scheme for instructing in safety habits, and in citizenship, the Mexican laborers employed on his lines in Arizona and New Mexico. He has visited every gang, even the smallest. One of his lectures has been put on a phonograph in pure Mexican language—not an Americanized Spanish—and this lecture, occupying ten minutes, has been delivered to all the Mexican workmen on 15,000 miles of line during the past year. At division terminals and other central points large audiences were gathered and they were entertained with Spanish music on the phonograph. In this way the sympathetic interest of the men was aroused in a manner otherwise impossible. The men are also treated to cigarettes.

#### OFFICERS

The officers of the Steam Railroad Section of the Council for the ensuing year, elected at the close of the meeting, are as follows: Chairman, W. C. Wilson, claims attorney, Delaware, Lackawanna & Western, New York City; vice-chairman, Isaiah Hale (A. T. & S. F.); secretary, H. J. Bell (C. & N. W.), Chicago, Ill.

#### EXHIBITS

In connection with the congress there was a commercial safety device exhibit, in the Armory on Larned street, a few blocks from the hotel where the meetings were held. Among the concerns represented were the following of particular interest to railroad men:

Allen Mfg. Co., Hartford, Conn., safety set screw.  
American Issue, The; Columbus, Ohio; anti-alcohol educational literature.  
American Abrasive Metals Co., New York; safety stair-treads.  
American Museum of Safety, New York.  
Baltimore & Ohio Railroad; speed recorder used on passenger locomotives; models of freight cars fitted with safety appliances; derailler with blue target attached, for car repairers.  
Chicago Eye Shield Co., Chicago, Ill.; goggles.  
Commonwealth Steel Co., Granite City, Ill.  
Detroit Fuse & Mfg. Co., Detroit, Mich.  
Linemen Protector Co., Detroit, Mich.; insulated shoes; rubber shapes to cover cross arms and wires when men are working at the top of poles.  
Macdonald, A. K., Hamilton, Ont.; night signal for highway crossing gates. This is a cage in which may be hung an ordinary hand lantern, and is arranged to show the light to persons on the highway and to hide it from enginemen on the tracks.  
Madden Co., Chicago, Ill.; the Richter blue-flag derail.  
National Safety Council, Steam Railroad Section; samples of safety bulletins recently issued.  
New York Central Lines; extensive display of colored photographs.  
Norfolk & Western Railroad; extensive display of photographs; illuminated diagram showing statistics of accidents; gage lamp.  
Puro Sanitary Drinking Fountain Co., Haydenville, Mass.  
Pyrene Mfg. Co., New York; fire fighting apparatus.  
Strong, Kennard & Nutt Co., Cleveland, Ohio; goggles.  
Surtz Guard Co., Chicago; guard for band saw.  
Walsh Press & Die Company, Chicago.  
Window Cleaners' Improved Belts and Device Company, Chicago.

**GROWTH OF THE AUTOMOBILE TRADE.**—Statistics of the director of the census show an increase of 153.9 per cent in the manufactures of automobiles and automobile parts in the five years from 1909 to 1914. The value of these products in 1914 was \$632,831,000, an increase of \$383,629,000 over 1909.

## WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., October 24, 1916.

### TRANSCONTINENTAL RATE CASES REOPENED

The perennial controversy over the adjustment of transcontinental freight rates again demonstrated its staying qualities when the Interstate Commerce Commission on October 21 issued an order consolidating all the various transcontinental rate cases into one proceeding and reopening them for a series of further hearings before Examiner-Attorney Thurtell. This order reopens not only the recent decision increasing rates to the Pacific coast because of the abatement of water competition via the Panama Canal, but gives an opportunity for a reconsideration of the entire question of the relation of rates between the East and the Pacific coast terminals and between the East and the intermountain territory, which has been before the commission in one form or another for nearly a quarter of a century. In its order the commission says:

"It is therefore ordered, That fourth section applications Nos. 205, 342, 343, 344, 349, 350, 352 and 10336 respecting rates on commodities from eastern defined territories to Pacific coast terminal and intermediate points, and applications Nos. 9813, 10110, 10126, 10155, 10186 and 10189 respecting rates on barley, beans, canned goods, asphaltum, dried fruit and wine from California ports via rail and water through Galveston to Atlantic seaboard points be reopened for further hearing respecting changed conditions that are alleged to justify other and different orders than those entered.

"It is further ordered, That therewith fourth section applications Nos. 345, 346, 347, 348, 349 and 1575 filed by R. H. Countiss, agent, on behalf of carriers, parties to his tariffs, named in said applications, respecting rates on classes and commodities from Pacific coast points to territory east thereof, and Investigation and Suspension Docket No 909, and the rehearing of applications respecting rates on commodities from eastern defined territories to Pacific coast points and rates on barley, beans, canned goods, asphaltum, dried fruit and wine from California ports to Atlantic seaboard points be consolidated and assigned for hearing before Examiner-Attorney Thurtell at Chicago, Ill., on November 20, 1916, at Salt Lake City, Utah, November 28, 1916, at San Francisco, Cal., December 4, 1916, at Portland, Ore., December 11, 1916, and at Spokane, Wash., December 14, 1916."

The reopening of the cases is due to the questions that have been raised regarding the readjustment of the rates to meet the changed conditions with respect to water competition. After the commission's percentage zone system of rates to the intermountain territory had been sustained by the Supreme Court in 1914, and after the commission had allowed modifications of it with respect to commodities especially susceptible to water competition to meet the competition of the lines operating via the canal, the Merchants' Association of Spokane, Wash., filed a petition on March 17, 1916, asserting that on account of the slides in the canal and the increased demand for ships for conveyance of traffic between the United States and various European countries, the services by water between the Atlantic and Pacific coasts of the United States had in large part been discontinued. It was also asserted that the commission's orders of January 29 and April 30, 1915, granting in part the relief sought by the carriers, were based upon the then existing necessity for the maintenance of unusually low rates by rail from eastern territories to Pacific coast ports on account of the competition by water which no longer existed, and that the commission should reopen the case.

On June 5, 1916, the commission issued orders rescinding the special relief from the fourth section which it had previously allowed on Schedule C commodities to meet the competition by the canal and ordered the carriers to file new



tariffs effective September 1, relieving the discrimination against the intermediate points by readjusting their rates on the Schedule C commodities under the rules and restrictions which the commission had prescribed for Schedule B commodities and by readjusting the rates on barley, beans, canned goods, asphaltum, dried fruit and wine from California ports to eastern seaboard points in conformity with the long and short haul clause of the fourth section. When the new tariffs were filed by the carriers effective on September 1 advancing the rates to the Pacific coast, they were met with a storm of protest from the shippers and were suspended by the commission until December 31, 1916. The order of the commission effective on September 1 was later postponed to become effective also on December 31.

On September 9 the Merchants' Association of Spokane filed a new petition alleging that there is not now and has not been since June 5, 1916, any water competition between the Atlantic and Pacific coasts and that there is now no justification for the maintenance of lower rates on any commodities from eastern territory to Pacific coast ports than to the intermediate points.

The order for a reconsideration of the case is, therefore, the direct result of this petition and marks the beginning of a new phase of the controversy regarding the extent to which the transcontinental carriers should be allowed to maintain rates which are lower for the longer than for the shorter hauls.

In 1892 the commission reduced rates from eastern points to Spokane practically to the basis of the terminal rates which were based on water competition. A later readjustment put Spokane back on its former basis of approximately the coast rates plus local back, and in 1901, in a proceeding instituted by the Business Men's League of St. Louis, the rates established by the carriers were substantially upheld. In 1907 Spokane renewed its complaint and in 1908 the commission rendered another decision reducing the rates to Spokane. This adjustment, however, was not satisfactory either to the shippers or the carriers and the commission allowed the carriers to submit a comprehensive plan of their own. In 1909 Salt Lake City filed a complaint against the adjustment by which its rates were higher than those to the coast and the entire system of transcontinental rates was brought into the controversy. In 1910 the long and short haul clause of the act was amended to give the commission authority to prescribe the extent to which the roads might depart from strict conformity with its provisions, and in 1911 the commission issued its decision authorizing higher rates to intermediate points than to the coast by various percentages from different zones. This decision was sustained by the United States Supreme Court on June 22, 1914.

After the opening of the Panama Canal the commission allowed still greater relief from the provisions of the fourth section on a special list of commodities.

#### SHREVEPORT CONTROVERSY RENEWED

The new tariff filed with the Interstate Commerce Commission by the Texas railways, advancing rates within the state of Texas in compliance with the commission's latest order in the Shreveport case, is no more popular with the Texas shippers than the rates made by the Texas railroad commission have been with the railroads of the state. The attorney general of Texas and representatives of the Texas Industrial Traffic League, the Texas Live Stock Shippers' Protective League, the American National Livestock Association, and a large number of commercial organizations of Texas appeared at a hearing before Commissioner Hall and the suspension board of the Interstate Commerce Commission at Washington on October 19 and 20 to ask the commission to suspend the new tariff, which applies to all classes and most of the commodities between points in the state of Texas as well as between Shreveport, La., and points in Texas. The shippers protested that the tariff is not in conformity

with the order of the commission, that it contains many rates not authorized or required by the commission, and that as to the rates for intrastate traffic it is in violation of the tariffs prescribed by the Texas commission. The principal grievance seemed to be that the railroads, in removing the discrimination against Shreveport, had gone much further and taken advantage of the opportunity to advance many other rates in Texas. The same contentions are scheduled to be presented to the United States court at Marshall, Tex., on November 8 on the hearing on the application of the railroads for an injunction against an order of the Texas commission withdrawing advances in the Texas rates which it had allowed in an effort to forestall the Interstate Commerce Commission. The attorney general of Texas filed a cross bill in this proceeding asking the court to annul the Interstate Commerce Commission's order on the ground that it is an unwarranted interference with the prerogatives of the Texas commission.

The commission announced that the hearing on the application for a suspension would be confined to rates alleged to be in contravention of its order. The shippers constantly sought to broaden the issue, saying that among the most important of the matters involved is that the tariff involves a construction of the decision of the commission with respect to the jurisdiction which it would assume and the extent and limitations thereof which lie at the very foundation of the right of the carriers to prescribe the tariff at all and to absolve themselves from obedience to the Texas commission.

As an illustration of the mixed-up situation which has been created by the conflict of state and federal jurisdiction in this case, one of the shippers' representatives said he did not know whether he ought to make his complaint to the Texas commission or to the Interstate Commerce Commission. One of the principal arguments of the shippers as presented by S. H. Cowan, representing the Texas Industrial Traffic League, was that while the commission had ordered that the rates between Shreveport and Texas points should not exceed those contemporaneously applied for all distances over points in Texas, this did not require the carriers to prescribe any specific rates between points in the state of Texas, and that by basing their rates on the maximum rates prescribed by the commission the railroads had gone far beyond any requirement of the order and that they could have removed discriminations against Shreveport without advancing the rates as much as they have. It was also claimed that the new tariff had created many more discriminations against Texas points and Judge Cowan argued that as the railroads had not legally contested the Texas rates they were not at liberty to fix their own rates as a substitute.

There was also much objection to the manner in which the railroads had applied the differentials which are added to the rates of the mileage scale. It was stated that whereas under the rules of the Texas commission the differentials on Texas traffic were available only after the maximum mileage distance had been traversed, whether in common point territory or in differential territory, in the new tariff it is provided that the differentials shall be applied for the entire distance traversed by a shipment in differential territory regardless of whether the maximum distance prescribed in the mileage schedules had been traversed or whether or not the entire haul or a part of the haul was in differential territory. This resulted, it was claimed, in much higher rates between points in Texas than those prescribed to and from Shreveport.

G. Waldo, assistant general freight agent of the Sunset-Central lines, and A. C. Fonda, agent for the Texas carriers, testified in defense of the new tariff. Mr. Waldo said that the carriers had applied the differentials in the way that they understood the order required and that if they had not done so the rates would have been reduced instead of advanced. He said the carriers had not taken advantage of the opportunity to advance as many rates as possible, that in many instances they had gone far below the maximum

rates allowed by the commission and below what they considered as reasonable. Both he and Mr. Fonda explained that the tariff had been compiled in a short time and that although many exceptions had been made to the Western Classification it was recognized that it would be necessary to make many more, and that as soon as opportunity offered it was proposed to confer with the shippers and to make additional adjustments necessary to meet commercial conditions and that some inconsistencies or errors in the tariff would be corrected. In reply to questions by shippers as to whether certain advances were necessary to avoid discrimination against Shreveport, it was stated that some of the rates were so absurdly low that the carriers had felt justified in taking advantage of any opportunity to advance them. The roads are now making some additional advances from Oklahoma and Arkansas points because the cause of the low rates had been removed. The shippers also complained of many violations of the fourth section and many discriminations as to which Mr. Fonda said they had misinterpreted the tariff.

The Texas Railroad Commission was not represented at the hearing.

The attorney general of Texas has also filed a suit in a state court against 34 roads that were not parties to the injunction proceedings against the Texas commission, asking for an injunction to restrain them from putting into effect the tariff filed with the Interstate Commerce Commission. The injunction was asked on the ground that the roads had agreed upon the rates in violation of the anti-trust law and that they were in violation of the Texas commission's orders.

#### SHIPERS FAVOR OPERATION OF WATER LINES BY RAILROADS

The New York, New Haven & Hartford has filed a brief of 166 pages with the Interstate Commerce Commission on its application under the Panama canal act for permission by the commission to continue the ownership and operation of its steamship lines on Long Island Sound. The number of briefs that have also been filed by representatives of the shippers in support of the New Haven's application indicates that they are not quite so much in sympathy with the idea of compelling railroads to give up their water lines as was supposed at the time of the passage of this law. The Boston and Providence chambers of commerce, 84 large manufacturing concerns in New England, 33 New England paper mills and a large number of boards of trade and other commercial organizations have submitted briefs supporting the contention that the continued operation of the New Haven's water lines in connection with its rail system is in the interest of the public and would not prevent or exclude competition. The manufacturers in their briefs say that "while they have differed bitterly on other questions, they are practically a unit in favor of the road's retention of the sound lines and the practically unanimous voice of New England shippers protests against the disjoining of a satisfactory service."

The Boston Chamber of Commerce says that a separation of the rail and water lines would probably result in congestion of the rail lines, that it would not result in any reduction of through rates and that the water routes constitute additional facilities, whose operation by the railroad is in the interest of the shippers of New England. The Providence Chamber of Commerce points out that the water lines are not in competition with the rail lines, but constitute an extension of the rail lines, which handle a different kind of traffic, and that they would carry less traffic if separated from the railway lines than if continued in connection with the railway system. The New Haven in its brief says that its contention that the service is in the interest of the public is supported by the testimony of the public service commissions of Massachusetts, Connecticut, Rhode Island and New Hampshire and by resolutions or petitions filed in the record

of the case by 100 business and civic organizations and about 120 shippers and representatives of the manufacturing industries in the territory served.

Shippers used to be rather fond of complaining because the railroads had neutralized water competition by acquiring competitive boat lines. Even after the rates of the railroads had been subjected to the most rigid regulation by commissions, the idea that they ought to be still further regulated by water competition wherever possible persisted to such an extent that in the Panama canal act of 1912 railroads were prohibited from owning competitive water lines except as authorized by the Interstate Commerce Commission. In accordance with its construction of that act, the commission ordered the railroads to get rid of their boat lines on the Great Lakes. When they did so, and when many of the boats instead of being promptly taken over by independent companies, were taken out of the lakes for service elsewhere, some of the shippers who had formerly protested loudly against the high rates charged by the boat lines would have been glad to have the service restored at almost any rates and many of them protested to the Interstate Commerce Commission against its decision.

Another example of this change in the attitude of the shippers was furnished at a recent hearing before the commission on the application of the Grand Trunk for a modification of the commission's order as to its operation of the Canada-Atlantic Transit Company, when the shippers were almost unanimous in supporting the road in its showing that a continuance of the ownership and operation would be for the convenience of the shipping public.

#### RAILWAY MAIL PAY

The Interstate Commerce Commission has acquiesced in the interpretation placed by the postmaster general on the provisions of the post office appropriation law authorizing him to make a test of the space basis of compensating the railways for carrying the mails. Under this interpretation the postmaster general proposes to begin his test on November 1 and later on, probably next spring, after he has readjusted the service, he will have a weighing of the mails and present statistics to the commission as the basis for its determination as to the rates to be paid for the service and the basis for payment. The commission, without giving any explanation of its reasons, has denied the petition of the Committee on Railway Mail Pay that the commission issue orders prescribing the conditions under which the test of the space basis shall be conducted in advance of its installation. The railroads asked the commission to prescribe the period of the test and also to require a weighing of the mails both before and during the test as well as the keeping of comparative statistics. The commission also denied the petition of the New York, New Haven & Hartford for an order requiring a weighing of the mails on its system before the test. The space basis will, therefore, go into effect on November 1 on all railway mail routes except those on which closed pouch service is performed, together with many changes in the service including a consolidation of the mails in many cases in order to reduce the amount of car space required and a redistribution of the mails between the roads. Railroads that carry the heaviest volume of mails will find their compensation reduced by the change from the weight to the space basis, while some roads that now carry a small amount of mail on many trains will probably receive an increase by being paid on the space basis. They will not profit, however, by any increment in the mail traffic which does not require an increase in the car space. After the test has been in progress for some time the postmaster general is to file with the commission a statement showing in detail the service required of the railways and a comprehensive plan for the transportation of the mails, embodying therein what he believes to be reasonable rates of compensation. The commis-



sion will then hold hearings and render its decision, the rates which it prescribes to be retroactive to the date of the experimental adoption of the space plan.

#### AN EFFORT TO DELIVER THE LABOR VOTE

The "non-partisan" American Federation of Labor has issued an official appeal to its membership in behalf of President Wilson's re-election, based principally on what he has done for organized labor. The circular letter is signed by President Samuel Gompers, Vice-President O'Connell and Secretary Frank Morrison as the federation's Labor Representation Committee, and urges all affiliated unions to consider the issues involved in the present political campaign at regular or special meetings of their organizations. In order to preserve its non-partisan character, the letter closes with a recommendation to members to vote as their consciences direct, but in case any of the consciences appealed to require any assistance, full directions are enclosed.

The letter says that "on November 7 a decision will be reached that will determine the future development of our country and the spirit of our national life for years to come" and that "during the present administration the organized labor movement has been able to secure recognition for the rights of human beings and opportunity for all to participate in the affairs of the nation in a degree that never has been accomplished before." Possibly as a sample of this participation in the affairs of the nation, although full credit is modestly given to the administration, it is stated that "due to the initiative of President Wilson the Congress extended the United States eight-hour law to include the workmen engaged in the operation of railroad train service of the country and a great national strike was thus averted."

#### I. C. C. INSPECTORS INVESTIGATE CAR SHORTAGE IN NEBRASKA

The Interstate Commerce Commission on October 21 announced that "in its endeavor to assist in relieving the present general car shortage situation, the commission has its safety appliance and boiler inspectors engaged in making investigations in respect thereto." At the same time the commission made public the report, dated October 13, of two inspectors assigned to investigate complaints brought to the attention of the commission by the Nebraska State Railroad Commission regarding conditions in that state. They had found in the files of the Nebraska commission a large amount of correspondence containing complaints from shippers alleging gross discrimination in the furnishing of cars, refusal to permit the loading of cars at points where they were made empty, a large movement of empty cars out of the state westward and furnishing shippers in other states with an excessive proportion of cars at the expense of Nebraska's grain industry.

The inspectors conducted a thorough investigation on the lines of the Union Pacific and Chicago, Burlington & Quincy, the two principal grain-carrying roads of the state, conferring with grain exchange men, shippers, railroad officers and station agents at the principal points in the state, but their report does not sustain the charges of discrimination against Nebraska. On the contrary, they say that "the carriers of Nebraska are putting forth every effort consistent with good operation and the exceptional traffic conditions to furnish cars and service to the shippers of the state as best they can," that the railroads are furnishing "all the cars they possibly can to supply the unprecedented demand," and that "if it was possible to furnish more equipment the business would and could not be handled as satisfactorily as it is at present."

The report shows that on the Union Pacific in July the average movement of system line cars was 50.8 miles per day and of all freight equipment handled 71.2 miles, while in August the averages were 59.9 and 77.5 miles, respectively.

Regarding the complaint that the road is furnishing an excessive number of cars to its western lines, the report says that conditions do not show this to be a fact. It is also stated that on the Union Pacific, with the exception of the movement of empty refrigerator cars westward to be loaded, practically all empty car mileage is local and only for the purpose of equitably distributing grain cars between the different districts.

Less complete data was obtained on the Burlington, but its situation is said to be fully as good as that of the Union Pacific. On the Union Pacific it was found that a balance equal to 24 per cent of its box car equipment was due the Union Pacific on October 9 from other lines, a large part of the cars being scattered on 30 different lines east of the Missouri river, while the Burlington was short 5,000 cars on its system. Only 3.19 per cent of the Union Pacific cars were defective or in the shops and the report says that the mechanical officers of both lines are making especial efforts to keep their grain cars in service. It also says that "it is generally conceded that railroads steal cars from each other whenever and wherever they can" and that this has considerable bearing on the car shortage situation.

The report says that with a view to relieving the car shortage situation the Union Pacific equipped 114 gondola side and bottom dump cars with temporary roofs and loading doors for grain service in Nebraska, but that the elevator companies in Omaha and Council Bluffs promptly levied an arbitrary charge of \$10 per car on the shippers for handling this type of cars and in some cases refused to handle them. The report says that there are approximately 300 blocked elevators in the state and that there is no immediate prospect of release. In fact, everything points to a greater shortage in the latter part of October and November when there will be a greater demand for coal and when the new crop of grain will be ready for movement.

An unusual feature contributing to the present heavy volume of traffic and having considerable effect on the car shortage is said to be the large eastbound movement of all products of the West and Northwest and that due to the inability to get shipments on the Pacific Coast. A great amount of business which under normal conditions always moves by rail and water is now being shipped by rail to eastern markets. There is also an exceptional stock movement at this time, particularly of range cattle, in advance of the regular fall movement, thereby adding to the heavy volume of business.

"Another feature contributing to the present car shortage," the report says, "is the large number of cars of all classes used for warehouse purposes by paying the demurrage charge. This includes all commodities, but particularly automobiles and contractors' and builders' materials and supplies. Recent instances are 25 cars of automobiles in Denver 15 to 35 days and 27 cars of automobiles at Green River, Wyo., 30 days. Lack of labor is particularly responsible for this condition. However, various other reasons exist for the warehousing of automobiles, principally lack of storage room and the time consumed by dealers in effecting financial arrangements that will enable them to get the bills of lading from the bank."

The report also refers to the large increase in the wheat crop as compared with 1915 and says that on account of weather and market conditions, as well as the grade of the crop, approximately 20 per cent only of the 1915 crop was moved prior to December 1, whereas this year on account of the exceptionally high grade of the 1916 crop and the high prices prevailing the farmers and grain men of Nebraska are endeavoring to move 100 per cent of the crop in one volume, regardless of the fact that their terminal facilities and elevator capacity are pretty well up to the limit of operation at this time.

"Nebraska railways at present have practically all the

business they could handle," the report says; "they are moving more tonnage per car per day than ever before, and it is the consensus of opinion of all concerned that if the inbound business was greater it would cause such a congestion at the grain terminals as to likely require an embargo on cereals and other farm commodities.

"If the present prosperity era continues, if the grain market holds up and conditions remain unchanged, the car shortage will become more acute as the weather gets colder and there is greater demand for coal. At present the coal supply is a serious question for Nebraska railroads. The amount on hand is below normal and the carriers are confiscating commercial coal. Weather conditions up to the present have been ideal for railroad train operation in the interest of all concerned; the carriers have been getting an exceptional mileage out of their locomotives, these having been in first class condition when they started to move the crops. That this high mileage cannot be maintained is admitted by carriers, because work must be done on the locomotives and with the advance of cold weather their efficiency is impaired.

"Special men have been detailed and have devoted their entire time to every feature of the car question, including the prompt movement of all cars and quick repairs to defective cars, in order to get the maximum mileage out of the equipment. Assuming that the Nebraska carriers had their full quota of freight car equipment on their own lines or equipment sufficient to supply the demand for grain cars alone, 48 hours' time would congest their grain terminals, completely blocking them and requiring an embargo.

"The cause of the car shortage in Nebraska is not by any means attributable to any single reason. Some of the contributing factors may be stated as follows: heavy volume of freight traffic in all commodities; unusual volume of Pacific Coast eastbound business, due to scarcity of ships on west coast; shortage of equipment, due to large number of cars being on foreign lines; limited grain terminal facilities; unusual high market prices for hay, grain, live stock and all other commodities; large volume of Nebraska grain moving east for export and receiving lines failing to furnish cars for their own haul; warehousing of all commodities in all types of cars; immense increase in the output of all branches of industry, as well as agricultural, without corresponding increase in equipment and facilities for handling it; all industries experiencing an abnormal increase in business without increasing their capacity, and in the majority of cases this naturally has forced the storage to be handled somewhere and somehow, eventually falling to the railroad equipment."

### AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS

A report of the first day's proceedings of the annual convention of the American Association of Passenger Traffic Officers held at Washington, D. C., on October 17 and 18, was published in last week's issue. Additional committee reports were presented and discussed on the following day.

The committee on economies in the operation of city ticket offices and in passenger service, S. G. Warner, general passenger agent, Kansas City Southern, chairman, submitted a report showing the progress being made in the direction of centralization of city ticket offices in many cities and recommending an extension of the work in this direction. The committee was continued with instructions to continue its investigation and its recommendations will be referred to the territorial associations.

The recommendation of the executive committee for the experimental adoption of a telegraphic cipher code for ordering Pullman accommodations was approved in a resolution instructing the secretary to obtain copies of the code to be sent to each general passenger agent. The latter will notify

the secretary how many copies they desire and at what stations they will be used in order that the secretary may place the order and advise each line at what stations the new code will be in effect. Symbols indicating the stations at which the code will be effective will also be published in the Official Guide.

The committee on revision of joint tariffs, J. P. Anderson, general passenger agent, Pennsylvania Railroad, chairman, presented a report including a number of recommendations for the simplification of passenger tariffs and the reduction of their cost. The committee was instructed to continue its investigations with a view to making recommendations to the territorial associations.

The association adopted and referred to the territorial associations the following recommendation of the conference committee regarding the operation of and charges for dining cars:

"That effective January 1, 1917, the minimum charge for supplying and operating each standard dining car, cafe coach or meal car of any description, for one meal, whether such car be moved in special service or on a regular train, provided it be furnished for the exclusive use of any party, shall be \$75; this amount, which represents the cost of labor, supplies and equipment, including linen, to be guaranteed before services are rendered. For each meal served in addition to the initial meal, in each standard dining car, cafe coach or meal car of any description, whether such car be moved in special service or on a regular train, provided it be furnished for the exclusive use of any party, a minimum charge of \$50 will be made; with a minimum charge of \$75 for each day of 24 hours or fraction thereof after the first 24 hours the car is in service, whether meals are served or not; this charge also to be guaranteed before services are rendered. The same guarantee and minimum to apply to meal stations. The above minimum charges to be exclusive of wines, liquors, mineral waters and tobacco."

The recommendation of the conference committee was also adopted providing that in all cases where a fare is to be divided on a pro-rata per rate basis the factors employed in connection therewith be stated.

The question as to whether the association shall adopt as standard the vertical or horizontal forms of the association multi-route tickets was referred to the standing ticket committee.

An amendment to the by-laws was adopted providing for the creation of a standing territorial committee; "to be composed of the chairman or other administrative officer of each territorial passenger association, together with three members from each local passenger association territory, and three members representing navigation lines, whose duty it shall be to present the recommendations of this association to their respective territorial associations, urge final and decisive action thereon, and report the result to the secretary of this association. The president of this association shall act as chairman when such committees meet in joint conference, and as such he may, on his own initiative or at the request of any territorial association, call such joint meetings of the standing territorial committees for the consideration of matters of interterritorial interest."

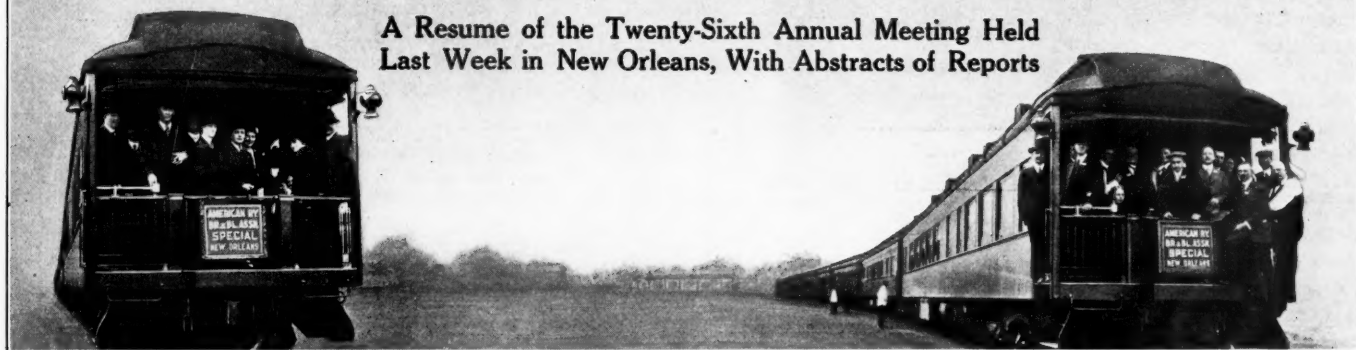
An amendment was also adopted providing for the appointment of a docket committee of three members whose duty it shall be to prepare a docket of subjects to include all subjects proposed by members for consideration at meetings of the association.

The election of officers was announced in last week's issue. The following were appointed members of the executive committee: J. W. Daly, passenger traffic manager of the New York Central; Gerrit Fort, passenger traffic manager of the Union Pacific; C. F. Bielman, passenger traffic manager of the White Star Line, and R. H. Wallace, general passenger agent of the Erie.



# Bridge and Building Association Convention

A Resume of the Twenty-Sixth Annual Meeting Held  
Last Week in New Orleans, With Abstracts of Reports



**T**HE twenty-sixth annual convention of the American Railway Bridge and Building Association was held at the Grunewald Hotel, New Orleans, La., October 17 to 19. It was one of the largest in point of attendance in the history of the association, over 160 members registering. With members of their families and supply men, the total attendance exceeded 375. A feature contributing to the large attendance was the operation of a special train of 11 cars from Chicago to New Orleans by the Illinois Central and the Yazoo & Mississippi Valley.

The officers for the past year were: President, Geo. W. Rear, general bridge inspector, Southern Pacific, San Francisco, Cal.; first vice president, C. E. Smith, consulting engineer, St. Louis, Mo.; second vice president, E. B. Ashby, chief engineer, Lehigh Valley, New York City; third vice president, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md.; fourth vice president, Lee Jutton, division engineer, Chicago & North Western, Madison, Wis.; secretary-treasurer, C. A. Lichty, purchasing department, Chicago & North Western, Chicago, Ill.

The convention was called to order by President Rear at 10 o'clock Tuesday morning and was opened with prayer by C. A. Lichty. In the absence of Mayor Behman, City Commissioner Newman welcomed the Association to the city on behalf of the public, while L. A. Downs, general superintendent of the Illinois Central at New Orleans, welcomed it on behalf of the railways.

In his annual address, President Rear referred to the great development which has taken place in bridge work during the quarter century the association has existed. He also referred to the growing chasm between the railways and some of their organized employees and to the contrast between the attitudes of these men and the employees of the bridge and building department.

The report of the secretary-treasurer showed a balance of \$1,403.47 in the treasury. During the past year 58 new members were received.

## A—INTAKES AND INTAKE LINES

The purpose of an intake is to provide an uninterrupted supply of water to the pumps. Also, if properly designed and constructed, it should prevent debris or rubbish carried by the water from entering the intake or the suction pipe and interfering with the operation of the pumps.

Where the bed of the stream and the bed load is composed of coarse sand and gravel with but little silt or mud a fine strainer such as a well screen may be buried in the stream with good results. Where silt, mud and fine sand are carried in the water it is necessary to provide the well or sump with two or more compartments where the water may be brought to rest and the heavy matter allowed to settle.

Where the water is clear and there is but little debris a

foot valve with a strainer will answer the purpose, always providing the foot valve is readily accessible and of ample area. The straining area of a foot valve should be at least three times the displacement of the pump and preferably more, as with insufficient straining area the velocity of the water through the strainer is increased, and the debris accumulates more rapidly.

Where no foot valve is used the end of the suction pipe is sometimes plugged and perforated for several feet, thus forming a strainer. This method permits turning the pressure back from the tank where a by-pass is provided and flushing out the strainer. This is not desirable, however, where there is much foreign matter in the water, as it interrupts the operation of the pumps and wastes a great deal of water.

Where the water is taken direct from the source of supply without any intake sump the "twin" or "multiple" strainer is undoubtedly more effective than any other type. As the name would imply, these strainers consist of two or more compartments, any one of which may be cut out of service and cleaned without shutting down the pump.

## SUCTION LINES

While in common practice a suction lift of 24 to 26 ft. is sometimes possible, a pump should rarely be placed more than 20 ft. above the lowest water and wherever practical just as close to the water as possible. Suction pipes should be made as short and direct as possible, avoiding all unnecessary bends or elbows. The size of the suction pipe will be controlled to a large extent by the permissible loss of suction head. If the suction line is of any considerable length it will be necessary to increase the size of the pipe to cut down the velocity and reduce the friction loss. In any event a suction line longer than 50 ft. or with more than two elbows should be at least one size larger than called for by the maximum delivery of the pump. Long suction lines and those with high lifts should be provided with vacuum chambers to take up the irregularities of flow due to the action of the pump.

## B—FUELS FOR INTERNAL COMBUSTION ENGINES

The intent is to discuss only the oil fuels, particularly the heavy petroleum oils.

Three distinct grades of engine-burning oil have been developed from the crude, which are designated as light, medium and heavy distillates. The light distillates are suitable for the gasoline engine and may be burned readily through a carburetor or mixing valve. Kerosene and distillates of 39 deg. Baume and over with a flash point of 230 deg. and under, and a burning point of 280 deg. and under may be burned readily in a gasoline engine equipped with a generator for preheating the oil before it enters the cylinder. The remaining distillates of 26 deg. Baume and over may be burned readily in the hot bulb type of oil engine.

The specific gravity is of minor importance, but a certain limit of low specific gravity is necessary to get the oil through the spray and lift pumps.

The main points in purchasing fuel oil for internal combustion engines are as follows: There should be only a trace of earthy matter, such as dirt, etc., in the oil, and not more than one per cent of water. Of coke residue there should not be more than a trace, as any appreciable amount will cause trouble in the plugging of the cylinders. There should not be more than a trace of free carbon in the oil. The sulphur content should not be more than 0.8 per cent, as a greater proportion may attack the cylinder walls and tend to cause pitting. The oil should contain no free ammonia, alkalies or mineral acids because of their pitting effect on the surfaces exposed to combustion. The oil should not contain more than 0.05 per cent of non-combustible mineral matter. A paraffin content of more than 15 per cent may cause trouble as a large quantity of oxygen is necessary for complete combustion. The oil should contain not less than 10 per cent of hydrogen and should have a heating value of about 18,000 B. t. u. per pound. The tar content should not exceed 0.4 per cent. Oil containing creosote will cause incomplete combustion and gives trouble by coking.

An intelligent study of the oil engine is essential to proper operation, regardless of the oil used, and with this end in view the following discussion is given. In order to utilize the existing equipment many of the gasoline engines now in service have been converted to kerosene and distillate engines by the addition of attachments for pre-heating the oil to (or near) the flashing point before it enters the cylinder. These attachments consist of generators or mixing chambers wherein the oil is heated by the exhaust of the engine. They are made in various sizes and types, both for throttling and for hit-and-miss governors. With these attachments the engine is generally started on gasoline and is allowed to run on this fuel until the cylinder and generator are heated when the oil is cut in. On other types a retort is provided where the oil is converted into a vapor or gas by heating the retort with a blow torch. Either method requires from five to ten minutes to start an engine running on oil. Electric ignition is used as with gasoline engines. Very little carbon trouble is experienced with the use of these attachments and the lubrication required is about the same as with a gasoline engine.

The heavy oil engine is a comparatively recent development and is being extensively used in railway water stations, as well as for other service. The most popular engine of this type is the two-cycle oil engine constructed in units of 50 hp. and under using heavy oil as fuel. This type of engine is very often confused with high compression engines operating on the Diesel principle or with the converted gasoline engines using kerosene and distillates through a carburetor or mixing valve.

Though the oil engine can not yet be considered as fully developed, it has passed the experimental stage, and while it is perhaps not as reliable under all conditions as a steam engine or pump, much of the prejudice against it is undoubtedly due to lack of experience in handling. With the present imperfect knowledge of what the engine is capable of doing and of which particular oils may be burned in it, one can not speak conclusively, but there is no doubt that the future of the engine is assured.

Committee:—C. R. Knowles (I. C.), C. A. Lichty (C. & N. W.), J. Dupree (C. T. H. & S. E.), and J. J. Murphy (S. P.).

#### DISCUSSION.

That part of the report relative to suction lines created a large amount of discussion, different members relating their experiences in overcoming troubles. A. Montzheimer (E. J. & E.) stated that he has secured the best results when he has lowered the pump to within 2 or 3 ft. of the surface of the

water. In some instances he has permitted the water to flow directly into the pump. C. R. Knowles (I. C.) stated that this is especially true with a worn pump. It is also more economical in maintenance and in cost of operation while it will deliver more water as the suction head is decreased. G. W. Rear (S. P.) called attention to the fact that as the length of suction line and the lift are decreased, the troubles from leakage, etc., diminish.

W. M. Clark (B. & O.) emphasized the necessity of individual study and design for each local water station, and described several installations which were entirely unsuited to conditions other than those for which they were designed.

In discussing the report on fuels for internal combustion engines, C. R. Knowles stated that conditions are changing so rapidly with reference to the oil supply that data which may be entirely correct today, will probably be out of date tomorrow.

### RAILROAD SHOP, ENGINE HOUSE AND FREIGHT HOUSE FLOORS

#### ENGINE HOUSES

Plank floors were formerly in common use but since timber has become scarce and the cheaper grades are of such poor quality it is not considered economical to use all-plank floors for the less important houses. In the middle western territory hard maple, which may yet be secured at a reasonable figure, is the best available material for a plank floor, but where a considerable amount of water is used for washing out engines, etc., the planking is liable to curl up or swell which is decidedly objectionable. Unless the planks are less than 3 or 4 in. in thickness the floors are easily damaged and require frequent repairs.

Cinders are most universally used and make a good floor for small outlying enginehouses owing to their low cost and cheap maintenance. Such floors should be well crowned and kept well rolled and tamped as they are liable to be carried away by the water released when washing out engines. An improvement over the ordinary cinder floor is to place upon a cinder bed a coating of about 5 in. of limestone screenings tamped to a smooth surface. An ordinary cinder floor costs about \$0.50 per sq. yd., while one with the top of screenings costs about \$0.75 per sq. yd.

Where the first cost is limited and engines are housed mainly for protection from the weather, an economical floor can be constructed of wooden blocks sawed from second hand pine or fir bridge timbers, such as ties, stringers, etc., and laid on end on a cinder cushion. Such floors are of low first cost and are easily kept in repair. Floors of this description are still in fairly good condition after 15 or 16 years of service with no repairs. The blocks should be of a uniform depth but the other dimensions may vary. Round cedar blocks have not proven satisfactory. The cost of wooden block floors as above described ranges from about \$0.90 to \$1.00 per sq. yd.

Concrete has been used quite extensively with varying success. A very acceptable floor is built with 6 in. of concrete with a 1 in. neat cement finish. This does not require the use of hardeners or water-proofing materials. The concrete is stopped a sufficient distance from the edge of the engine pit to admit placing a jacking plank and to permit access to the wall plates and rail plates when it becomes necessary to remove them.

Vitrified brick laid flat on a well-tamped gravel or puddled sand foundation 5 or 6 in. thick and with sand-filled joints can be laid at a cost of about \$1.25 per sq. yd. Clay, loam and other such materials can be used for filling. The committee is of the opinion that a brick floor, laid on a concrete foundation, and costing \$2 to \$2.25 or more per sq. yd. is not to be recommended because of the cost.

Creosoted wood blocks, with the grain vertical, laid on a



2-in. sand cushion on a well-puddled and rolled gravel bed with a 4-in. crown at the center between tracks have been extensively used and have given good satisfaction. Hot sand should be used to fill the joints. The blocks may vary from 4 in. by 3 in. to 4 in. by 6 in. in size. The depth of the blocks should be uniform and from 4 in. to 8 in., the greater depths naturally holding better surface. This type of floor costs from \$1.25 to \$2.50 per sq. yd., depending on the thickness and local conditions. The same kind of floor laid on a 6 in. concrete foundation with asphalt filler will cost about \$3.25 per sq. yd. This is an ideal engine house floor, as it is not so liable to damage as one constructed of harder materials when subject to falling objects, and it is almost impervious to water.

An asphalt mastic top  $1\frac{1}{2}$  in. to 2 in. thick on a concrete base has been in use for some time and as far as the committee has been able to learn has given very good results. Such a floor can be built for about the same cost as creosoted blocks on a concrete base as above described.

#### MACHINE AND BOILER SHOPS

The materials commonly used for floors in machine and boiler shops, listed in the order of their longest use are plank, concrete, brick, creosoted blocks and mastic. The price of all of these floors runs about the same as in engine houses except that a concrete floor should be laid heavier to jack on, and should be not less than 5 in. and preferably 7 in. thick and laid on a slag or gravel foundation with a 1 in. float. The type of floor will cost about \$2.50 per sq. yd.

Asphalt mastic on a concrete base is an ideal shop or engine room floor. In this case the concrete should not be less than 5 in. thick with a slip of felt saturated in asphalt next to the concrete. The asphalt mastic should be from  $1\frac{1}{2}$ -in. to 2-in. thick, and it should be as hard as possible on account of the grease that is liable to drop on it in such buildings.

Some of the committee are of the opinion that a creosoted wood block, with the blocks 4 in. thick and with an asphalt filler on a concrete foundation, practically the same as recommended for enginehouses, is a good floor and can be used in machine or boiler shops. The blocks should be rectangular in shape, of uniform length and free from any irregularities so as to prevent unevenness, as the floor wears under constant heavy use. The committee has recommended asphalt filler entirely instead of other tar products as the others soften under different degrees of temperature.

#### WAREHOUSE AND TRUCKING FLOORS

The committee has knowledge of an untreated wooden floor, made of 2 in. D. & M. maple laid on 3 in. pine sub-planking on sand or gravel filling that has been in use under heavy trucking for 19 years and is still good. This floor was subject to heavy freight trucking.

For certain classes of floors a concrete surface is good as it costs \$0.80 to \$1 per sq. yd. less than a floor with a mastic top. However, there are several objections to this class of floor for trucking purposes including dampness, dusting, and slipping on account of frost or other substances. They are also objected to by truckers, as they are cold to the feet.

It is the opinion of the committee that the best trucking floor is made with a concrete base and an asphalt mastic surface from  $1\frac{1}{2}$  in. to 2 in. thick; this mastic to be well troweled but not hard enough to destroy its elasticity. Particular care should be exercised in getting mastic of the consistency to withstand various changes in temperature. In the south the floors can be made very much harder than in the north. The mastic should not be so soft as to flow when subjected to the trucking load.

When these floors are properly laid the small creases which will occur on account of jams from barrels, etc., will gradually iron out to a smooth surface in the regular course of

trucking over the indentations. Such a floor costs approximately \$2.50 to \$3.50 per sq. yd.

A wood floor is being put on the market so constructed that the wearing surface is on the ends of a  $1\frac{1}{2}$ -in. by  $3\frac{1}{2}$ -in. block 2 in. in depth dovetailed onto a base of either 1-in. or 2-in. plank. This floor can be laid the same as other plank floors with the wearing surface on the ends of the blocks.

Committee:—D. Rounseville (C. & N. W.), J. S. Robinson (C. & N. W.), G. A. Mitchell (G. T.), and R. M. Bowman, (L. E. & W.).

#### DISCUSSION

E. C. Morrison (S. P.) described a mastic top on a concrete foundation in six freight houses 800 ft. long by 60 ft. wide in San Francisco. While this type of floor costs 15 per cent more than wood, it has required no repairs in the two years it has been in service. W. M. Clark (B. & O.) advocated the use of creosoted wood blocks on a concrete base with a  $\frac{1}{2}$  in. sand cushion, having secured favorable service from this form of construction. He reported difficulty with maple floors rotting from below because of poor ventilation.

J. B. Sheldon (N. Y., N. H. & H.) reported difficulty with concrete floors disintegrating in freight house service. C. H. Fake (M. R. & B. T.) has found that concrete floors will give good satisfaction in small freight houses where there is little trucking, but that they are not so satisfactory at larger stations. L. D. Hadwen (C. M. & St. P.) stated that concrete floors have been used in a number of freight houses on his road without trouble.

J. Gratto (S. P.) placed an asphalt macadam top on an untreated plank deck on a wharf at San Pedro, California, about 12 years ago. This wharf is subjected to heavy cart trucking and a timber floor lasted only a short time. The asphalt top was applied at a cost of  $9\frac{1}{2}$ c. per sq. ft. and has given such good satisfaction that it is planned to add it on a large amount of other wharves.

#### METHODS OF DRIVING PILES

Track pile drivers are of two general types: turntable drivers and boom drivers. In some locomotive crane drivers these features are combined. Turntable drivers are in more common use but the boom driver has a number of advantages.

In the early days of railroad pile driving, drivers were frequently built in company shops. Today, there is less of this and machines are more commonly purchased from manufacturers. In general they are of standard all-steel construction and are equipped with air pump and brakes for operation separately or as part of a train. They are self propelled, power being supplied from the engines through shaft and gear connections to the car wheels. They can run at speeds of from 8 to 25 miles an hour and some can haul several cars. The turntable is turned or shifted and the leads raised and lowered by steam power under the control of the engineer. The leads may be battered in two or three directions, usually by hand operated mechanism, and either a steam or a drop hammer may be used in them. Idlers are required at one end when moving these cars in trains.

Some drivers have a very long reach. One that will reach a second bent ahead is a great aid in emergency driving after a fire or washout. A wide side reach is valuable on three and four-track lines and for such use those drivers which have little overhang at the rear are advantageous.

The ability to operate the turntable mechanism and raise and lower the leads by hand as well as by power is a feature of some machines. A boom supported at the foot of the leads when raised, or on the hammer, is a handy contrivance for lifting bridge timbers, and electric lights for night driving are desirable. These have been applied by the Union Pacific to one of their drivers.

Steam hammers are in use and are recommended for cer-

tain classes of work on 31 of the 52 lines answering the committee's inquiry. A decided preference is shown for medium weight steam hammers. In general, railroads are using hammers weighing from 2,800 lb. to 3,500 lb. although seven of the roads reporting to the committee are using heavier hammers for some of their work, mention being made in one case of a hammer weighing 4,500 lb.

Practice in regard to the assignment of drivers to divisions or to the whole line is not uniform. For the most part, drivers are assigned to the whole line although on some of the larger roads a driver is assigned to each division but is moved to nearby divisions if there is occasion for it. In addition to the division drivers, there are sometimes additional drivers which are assigned to the whole line and used where there is a large amount of work, or on construction jobs.

Where drivers are assigned to divisions the pile driver crew is more or less permanent, but where assigned to the whole line the more common method is for the engineer only to accompany the driver. It is claimed by some that better driving results from this arrangement—presumably local pride has an effect. On the Illinois Central, where the whole line drivers are used largely as erection cars, and on some other lines, crews are regularly assigned with the drivers.

Pile driver crews vary in size from 6 to 15 men, the average being 10 men. This does not include a night watchman. The average number of men on roads using drop hammers only is  $10\frac{1}{2}$  and on roads which use both steam and drop hammers,  $9\frac{1}{2}$ . Where there is a large amount of driving to do or especial need for fast work, a separate gang for framing is usually provided and some roads always provide them, but generally the same crew drives and frames a bridge.

Records showing the total penetration are quite generally kept. Blank forms on which a variety of information is shown are used on many lines.

The water jet is in successful use under proper conditions on about 50 per cent of the railroads reporting. Some use it only with concrete piles, others for foundation piles or with a marine driver only. But one failure is reported and that is ascribed to the small size of the pump. Favorable conditions for the use of the jet are sandy soil, or gravel, and deep penetration.

In view of the large amount of attention given to the matter of safety during the last few years, an effort has been made to bring out descriptions of features which have been adopted for this reason and a list is presented which it is believed will prove interesting and profitable. Some of the suggestions have been adopted by practically everybody.

- Rail clamps when driving on the side.
- Cable guards to protect leads when driving on high elevations.
- Steel pile cap.
- Steam power for operating leads and car brakes.
- Driver so constructed that no idler car is required when in a train.
- Covering for all moving parts of machinery.
- Stops for holding the hammer while a pile is being set in place.
- Cables run along the main tension braces on a land driver and fastened to the main members to prevent the collapse of the frame in case of bolt failures.
- Hand railing around the driver and tank at about the floor level.
- The steam hammer.
- Careful design.
- Competent men.
- Careful inspection of lines and keeping the driver in good repair.
- Provision for throwing the propelling mechanism in and out of gear from the side of the car.
- Painting white the side of the hammer nearest the engineer so that he may readily see it.
- The use of a blue lantern to signal the engineer when working at night to avoid confusion with train signals.
- Special precautions to insure protection by flagmen as well as by train orders.
- Metallic steam hose from the boiler to the hammer.
- Foot boards on the front end.
- Pile and hammer cables carried under the floor of the car; two extra running sheaves are required to accomplish this.
- One or two other suggestions were made but were not described in sufficient detail.

Committee:—Maro Johnson (I. C.), J. P. Canty (B. & M.), R. H. Reid (N. Y. C.), J. P. Wood (P. M.), and O. F. Dalstrom (C. & N. W.).

## DISCUSSION

A. Montzheimer (E. J. & E.) urged the importance of the keeping of full penetration records of all piles driven because of their importance in valuation matters, not only as proof of the penetration secured, but also as a means of securing data regarding the wastage from the cut-off. A. S. Markley stated that such a record which he has kept since 1881 was consulted freely by the valuation department of his road when the government forces were making their inventory. G. W. Rear (S. P.) pointed out the fact that, within reasonable limits, it costs as much to drive a pile of one length as of another and that for this reason unit costs prepared on the basis of the lineal feet of piling driven are misleading and of little real value.

L. D. Hadwen (C. M. & St. P.) referred to the increasingly common practice of using steel cables with drop hammers in place of manilla rope. E. K. Barrett (F. E. C.) stated that he has used  $\frac{3}{4}$  in. wire cable for this purpose for 15 years and that he has driven as many as 1,300 piles with one cable without a break. Wire cable costs less than rope.

While discussing the relative merits of steam and drop hammers G. W. Rear stated that 50 per cent of the piles are overdriven and that a steam hammer will ordinarily secure all the penetration a pile requires, this conclusion being based on an observation of many broomed piles.

## HANDLING CREOSOTED TIMBER

After going to the expense of treating timber it would appear to be self-evident that it should receive no unnecessary abuse that would tend to render the treatment ineffective. Yet largely as a result of ignorance and carelessness one sees treated timber handled with hooks and cut unnecessarily on nearly every railroad. If the character of construction is such as to warrant the use of treated timber, precautions certainly should be taken to avoid all unnecessary penetration of the protective surface. To gouge or tear this surface so as to expose the untreated timber, even at one minor point, may be sufficient to start decay within the stick and lead to early failure of the entire piece. Notwithstanding this, only two or three roads have prepared any instructions for the guidance of workmen handling treated timber. Some rely on verbal instructions, which are unreliable at best, while others seem to have given the subject almost no attention.

The problem is primarily one of education. If the injury resulting from the cutting of treated timber is pointed out to them and they are shown how to avoid this damage, most men will co-operate in eliminating this unnecessary destruction. Such measures, coupled with disciplinary action for the men who will not respond to educational measures, will eliminate a large part of the mutilation of treated timber found today.

The problem is not alone one for the men to solve, however. The timber must come to them in a condition requiring the minimum practicable amount of framing in the field. This has led to the framing of a large amount of timber before treatment, a practice which is receiving serious consideration on several roads today.

On the Philadelphia & Reading the chief engineer furnishes the creosoting plant with the details and framing instructions for all timber used on new construction work, and this timber is framed at the creosoting plant before being treated. Similarly, whenever the proper arrangements can be made, the division engineer furnishes the timber-treating plant with detailed drawings of timbers required for maintenance of way work and they are framed in a similar manner.

Even with the most careful precautions it frequently becomes necessary to bore into timber or to cut it when using it in the field. The problem then is to protect it and to duplicate the original treatment as far as possible. It is the quite general practice to fill all bored holes with hot creosote



and to apply coal tar, or, preferably, hot creosote to all cut surfaces. This treatment should be applied to all surfaces which have been cut, whether they show untreated wood or not. On one or two roads a coat of hot pitch is applied after the creosote as a seal.

Care should also be taken to avoid the use of treated and untreated material in the same structure. Instances are frequent where a workman runs short of treated material and thoughtlessly fills out with untreated timber, or applies a brush treatment to sufficient timber to complete the structure. The usual result of this action is to reduce the life of the adjoining treated timber, if not of the entire structure, almost to that of the untreated or partially treated timber.

Piling requires special treatment, according to the conditions under which they are to be used. Where they are to be used in water infested with marine borers, special attention should be given to see that they do not contain pitch knots or other blemishes which will retard the penetration of the oil. Care must also be taken to see that the surface is not injured in handling.

For the same reason that it is advisable to apply a brush coat to all cut surfaces of stringers and framed timbers, pile heads should be protected after being cut off. The Atlantic Coast Line applies a paste of coal tar and lime to the exposed tops of piles. The Southern requires the heads of the piles to be coated with hot creosote, followed by an application of coal-tar pitch of such consistency that it will remain elastic at the lowest temperatures encountered.

In addition to the avoidance of all unnecessary cutting into treated timber, care should be taken in handling it to and from cars to avoid abrasions that would penetrate the treated surface. Heavy timbers should not be thrown from a car, as this tends to split and break them. Neither should they be handled with sharp-pointed grab-hooks or peavies. A number of roads use skids to transfer such timbers from pile to pile and to and from cars. Heavy slings are also used in place of grab-hooks. While this may require some special attention at first, after such practices become standard and the men become accustomed to them, little, if any, additional time or exertion is required.

Closely allied with the adoption of methods to secure full service from treated timber is the investigation of all failures to ascertain their cause in order that similar conditions may be avoided in the future. Too frequently treated timber which has failed to give satisfactory service is removed from a structure and destroyed without an examination being made to ascertain the cause. The result of a multiplication of such instances is a prejudice against all treated material and perhaps the discontinuance of its use. Treated timber has been used successfully too long to justify its condemnation because of any isolated failures, and the road which takes such action does so to its own detriment.

Committee:—E. T. Howson (*Railway Age Gazette*), J. S. Lemond (Sou.) and F. D. Mattos (S. P.).

#### DISCUSSION

There was a difference of opinion regarding the extent to which the framing of timber before treatment is practical. C. R. Knowles (I. C.) stated that he uses creosoted timber in the supports for wooden water tanks, all of which is framed in advance at the treating plant. He has found that it is rarely necessary to bore a hole in the timber after it has been treated.

#### PASSENGER STATIONS OF MODERATE SIZE

There is no set rule by which the size of a station suitable for any town or city may be determined. The revenue from ticket sales is an index of the passenger business originating at a station, but it may be misleading as to the kind of a station required, for some towns originate very little passenger business and yet are called upon to handle heavy traffic.

The amount of transfer business must also be considered, and, where there is much of it, comfortable and commodious quarters must be provided. Many railroads have standard designs for the smaller stations, but these cannot be adhered to very closely because every location has different conditions that require modifications.

The station proper should have a general waiting room, and leading off from this a women's retiring room, with toilet, and also a men's smoking room and toilet. On the opposite side of the room there should be a ticket and telegraph office, and a baggage and express room. In addition to the ticket window there should be a window between the general waiting room and the baggage room so that passengers can check their baggage without going out of the station.

With the maintenance cost in mind, the committee recommends the use of brick, stucco or concrete, because the first cost is very little higher than that of a frame structure. If brick is used it should be re-pressed or vitrified because a soft brick will result in a damp building. Rough texture bricks are being used extensively, and are more pleasing in appearance than smooth brick. In the matter of maintenance the painting of wooden buildings amounts to considerable.

The interior of the station is usually of wood frame because it is cheaper and there is little danger of fire in a structure of this character. Brick or hollow tile makes a more substantial and fireproof interior, but the cost is not often justified. Walls are generally plastered and usually the lower five or six feet are covered with a wood wainscot in the waiting rooms, with tile in the toilet rooms. In many stations the walls are finished with a light-colored brick. This gives a finished surface that lightens the dark rooms and is very satisfactory from the standpoint of wear, but it is much more expensive than plaster.

One of the principal problems in a station is the floor surface. Wood holds and absorbs the dirt, while varnish is soon scratched and worn off by the cinders carried in by the passengers. Where wood is used it should be either maple or edge-grain pine. Composition floors are used extensively; they give a hard, impervious surface, but their wearing qualities are not altogether satisfactory. Some tile floors have given good results, but others have worn badly, because the cinders are ground into them, causing the surface to craze and discolor. Floor tile should be vitrified to wear satisfactorily. The ticket offices should have wood floors, while vitrified brick floors give the best wearing surface for baggage rooms.

Platforms should be not less than 10 ft. wide. In front of the station building they should be not less than 16 ft. wide and as much more as can be consistently allowed. Vitrified brick is quite generally used, but many roads prefer concrete. One feature in favor of a brick platform is that if settlement occurs or if any of the brick become broken they can be repaired more easily than if the platform is built of concrete.

Committee:—M. A. Long (B. & O.), E. B. Ashby (L. V.), G. W. Andrews (B. & O.), and J. B. Gaut (G. T.).

#### DISCUSSION

L. D. Hadwen (C. M. & St. P.) deprecated the use of timber floors in otherwise attractive stations, favoring some type of composition floor which, although requiring expert workmanship in laying, is more sanitary. E. C. Morrison (S. P.) stated that he has placed tile or concrete floors in small stations whenever it has been necessary to remove timber floors, preferring tile floors.

In reply to a question J. S. Robinson (C. & N. W.) stated that he has used asbestos and asphalt shingles with satisfactory results, but that he has found that the asbestos shingles discolor more, particularly from the drip from wires crossing overhead. He has also found that it is difficult to keep

clean the concrete floors in the small stations which do not have janitor service unless they have been well trowled when laid.

#### HANDLING CONCRETE ON SMALL JOBS

It was decided that only such work should be considered as did not exceed 200 cu. yd. in volume and which would not warrant the installation of a special plant. Replies to a circular letter asking for information regarding these practices were received from 41 different railroads, representing a total of 127,500 miles, and covering practically all the different railroad conditions that would be encountered in North America. A summary of the replies shows that 31 roads, representing a mileage of 100,280, handle their small concrete work with their own forces in general, while two of the roads having a mileage of 2,839 handle such work exclusively by contract. Six roads with a mileage of 24,403 use both methods, being governed by the nature of the work, its volume and the convenience in handling, the question of labor supply playing an important part in the method used. On small jobs of this character, contractors are often not in a good position to compete as the work is connected with operating features and has to be adjusted to suit them rather than to suit the convenience and economy of its conduct. The question of safety and the desire to have the company's own employees handle construction under operated tracks or in yards and shops have an important influence in eliminating contract work in many instances.

In considering the relative economy of handling work of this character by contract or by company forces, the fact that the contract price does not cover all the incidentals in connection with the work should not be overlooked. Company work is often conducted at a disadvantage from the point of economy in order to facilitate the work of other departments and delays which company's forces may experience would result on contract work in large bills of extras which do not appear in the contract price.

It would seem that the practice of using the ordinary bridge and building maintenance forces to handle concrete work, incidental to other work they may be doing at a given point, would tend to economy even though their labor is higher priced than that of the concrete men, as, in this way, the moving expense of a second crew can be eliminated and the entire work completed at one time. On the other hand, there are many small pieces of work such as the laying of sidewalks and crossings where the most economical results can be obtained by availing oneself of the services of local contractors.

In regard to organization, the preponderance of sentiment seems to be in favor of having such small work handled and supervised by the division forces. In some instances it is the practice to employ the carpenter forces to handle the smaller concrete jobs hiring additional laborers where necessary.

Of the replies received, 31 indicate that they are able to organize the work so as to admit of a regular program through the season while five are unable to do so. Three handle work of this kind by means of regular floating gangs. In most cases a program is mapped out in the spring and forces are organized to cover the season's work though it is sometimes necessary to organize to take care of individual jobs. A desirable way of taking care of such small jobs would be to have a crew organized under the district authority to take care of the work on each district or division where the volume makes this justifiable. Some roads keep a regular gang all the year handling this class of work and moving from one division to another. This method is used on the Chicago, Burlington & Quincy, floating gangs moving from one division to the other and cleaning up all work as they go. On the Chicago, Rock Island & Pacific, regular bridge gangs are used for small work.

A feature to which attention was called by the Nashville, Chattanooga & St. Louis is the use of suitable boarding cars for the crews and greater attention to this feature would tend to economy by making the conditions of the work more attractive and tending to hold men permanently. Efforts in this direction will help to solve the labor problem more than almost any other factor. The smaller jobs demand a better quality of labor than pieces of concrete work of greater magnitude where the men do not need to be as adaptable.

The outfit should be adjusted, as far as possible, to the character of work the crew will be called upon to do and the hauling of all excess equipment and surplus second hand lumber, etc., from other jobs should be avoided. Nearly all roads favor the use of a small mixer in any concrete outfit. In most cases the carpenters are required to furnish their own tools but it is economy to have a liberal supply of hammers, saws, etc., on hand in an outfit so that laborers can be pressed into service, sheeting up the forms, etc., when they would otherwise be waiting. For crews making frequent moves, a tool car will save much handling as small amounts of cement and lumber can be carried along with the outfit and only such tools as are necessary for the job in hand need be unloaded.

The size of mixer recommended shows considerable variation, evidently, larger work being considered in some instances in the replies. Only 6 prefer hand mixing for small work. Sixteen recommend mixers with from 6 to 9 cu. ft. capacity of the unmixed charge. This corresponds to a 1-sack batch mixer. Eight prefer a half yard or 2-sack batch mixer and two use  $\frac{3}{4}$  yd. machines.

The opinions as to the minimum sized job on which the use of a mixer is justifiable vary widely. Four roads recommend using some form of mixer for quantities as small as 5 cu. yd. Six would use one where the quantities are from not less than 10 to 30 yd., 5 set 50 yd. as the limit and 6 consider 100 yd. a minimum. This is a matter that depends on available equipment, but there is little doubt that the small mixers now on the market make machine mixed concrete possible on almost any work no matter how small.

Committee:—L. D. Hadwen (C. M. & St. P.), J. W. Wood (P. M.), C. F. Green (S. P.), and G. H. Stewart (B. R. & P.).

#### DISCUSSION.

C. E. Smith described the former practice of the Missouri Pacific of contracting all concrete work, which practice he found unsatisfactory. When organizing to handle this work with company forces, gangs were assigned to the local divisions and the quality of the work was materially improved. After the organization had been perfected and the necessary equipment secured, it was found that the number of requests for the replacement of timber bridges with concrete construction increased very rapidly. Between 1910 and 1915, 25 miles of timber bridges similar to those which had previously been renewed in kind were replaced with concrete culverts and embankments. The installation of company work enabled unit prices to be reduced 25 per cent. Up to one year ago no concrete work had been contracted for the last four years.

#### SMALL COALING STATIONS

There are certain general features of small coaling stations which are objectionable and which should be given careful consideration before any particular type of plant is installed. Some types require a trestle immediately over the coaling track at such a height as to just clear a high car. This condition is dangerous and objectionable, especially if the coaling is done on the main line. If that part directly over the tracks is of steel, the maintenance will be high, for the metal will be eaten away rapidly by the gases from locomotive stacks. If the overhead structure is of wood there is danger from



fire, and also the trouble from the wood decaying quickly on account of the moisture from the exhaust steam.

The use of long tracks to serve coaling stations is to be avoided wherever possible. The first cost for track construction is considerable and there is always a large amount of maintenance in connection with any track which is used continuously. One should therefore select a type of coaling station which requires the minimum amount of trackage.

With a timber structure there are always heavy maintenance charges when it gets old. The fire risk must also be considered. It is a serious matter to lose a coaling station by fire, even though it is a small one, for, owing to the location and number and character of the trains served, a small station may be just as important to the operation of a railroad as a larger one.

Air-hoist bucket plants are used on many western roads for small stations. The trackage necessary is not great and the maintenance of such a plant is not high when the small amount of coal used is considered. The frame supporting the hoist is usually built over the coaling track, but some of the railroads use an air hoist having a derrick which swings out over the coaling track and avoids placing an obstruction over the coaling track.

A number of stations on the Southern consist of a high platform built alongside the coaling track at the proper height to permit shoveling coal from the platform to the engine. Above this platform and further back from the coaling track is an elevated trestle up which cars of coal are pushed on a five per cent grade, and from which the coal is dumped to the platform. The cost of such a coaling station naturally varies, depending upon the size of the platform and the amount of track necessary to serve the plant. The cost of operation is high on account of the large amount of labor required in moving the coal. The cost of maintenance is also fairly high because so much timber is used in the construction.

The Union Pacific employs mechanical plants almost exclusively, even where the consumption is small. On the Chicago & Alton the gravity type of coal chute is used, where the cars are taken up a high trestle and the coal is dumped by gravity into bins, and thence by gravity on to the engine. This type is preferred for the larger stations, but this road is using mechanical plants at less important stations, and where the space is restricted.

On the Pennsylvania Lines West practically all plants are either of the mechanical or gravity types with pockets to receive the coal from cars and then dumping by gravity on to the locomotives. These two types are used for small as well as large stations, and the costs of maintenance and operation compare favorably with those for plants on other roads.

The Western Maryland uses a small coaling station in which the loaded cars are pushed up an inclined trestle to the proper height above the coaling track. The coal is dumped from cars about 8 or 10 ft. to the platform and is then shoveled into small narrow gage cars. These cars are then pushed out over a locomotive standing on the coaling track and dumped. This is another type of plant where the topography must be favorable in order to get the cheapest installation. It has the objectional feature of an obstruction over the main track. The operation is a little high but the maintenance is about normal.

On the Baltimore & Ohio practically every type of coaling station is used, with the mechanical plant and the locomotive crane favored more than the other types. The Hocking Valley reports a coaling station in which a locomotive crane is used to fill elevated bins. The cost of this plant and the operation and maintenance are rather high.

In the small coaling stations on the Santa Fe the coal cars are pushed up onto a trestle and the coal is shoveled into pockets alongside the trestle, from which it flows by gravity

to the locomotives. On the Chicago & North Western the gravity pocket and the air hoist-bucket types are used. The gravity-pocket type used where the consumption is small is the same as that employed on the Santa Fe. For the air hoist-bucket type a derrick is erected, the coal is shoveled from cars onto a platform and then into one-half ton buckets and it is then delivered to the engine by means of the derrick the coal being dumped by opening the bottom of the buckets. Air from the locomotive is used in operating the derrick while the engine is being coaled. The derrick is also equipped for hand operation for moving the buckets around while they are being filled. The operation of these plants is rather high on account of the labor needed; the maintenance, however, is low.

A coaling station where the consumption is small should be as inexpensive as possible, that is, it is preferable to have a plant in which the cost of operation may be high rather than an expensive plant on which the operation may be comparatively low. In deciding on the construction of a coaling station the interest on the investment must be considered, and this may more than offset the higher cost of operation of a cheaper plant. Another thing to be considered is that small plants are more liable to be moved than larger ones.

Mention has been made of the growing tendency to use locomotive cranes for coaling stations. However, the cranes now in use are large machines having a capacity of from 15 to 20 tons. These cranes cost from \$6,000 to \$8,000, and if they are used in connection with elevated bins they result in rather expensive coaling stations. One company has worked up a design for a small crane having a capacity of 4,000 lb. at a 20-ft. radius, which will cost about \$3,000. The only thing necessary to equip a small coaling station in addition to this crane is 400 or 500 ft. of trackage. The labor for operating such a plant will not require more than two men, and it will undoubtedly prove to be economical both in operation and maintenance.

Committee:—L. Jutton (C. & N. W.), W. F. Strouse (B. & O.), J. H. Nuelle (N. Y. O. & W.), and G. W. Kinney (L. A. & S. L.).

The report was accepted without discussion.

#### OTHER REPORTS

A comprehensive report on Paint and Its Application to Railway Structures was presented in abstract by C. E. Smith, chairman. This report reviewed the tests of paints made during recent years by the American Society for Testing Materials and the reports on painting made to the American Railway Engineering Association two years ago. It closed with a statement of the results which have been secured from the coating of a large amount of steel work with the cement gun on the Kansas City Terminal Railway.

A report on Efficient Methods of Handling Work and Men, presented by F. E. Weise (C. M. & St. P.), chairman, described the methods of handling five special problems economically.

#### DR. VON SCHRENK'S TALK

At the session on Thursday morning, Dr. Herman Von Schrenk, consulting timber engineer, St. Louis, gave an instructive talk on timber, its uses in railway work, its failures and precautions which may be taken to avoid them. After discussing briefly the prevalent waste of timber in this country, particularly when compared with European practices, he pointed out means of securing the most economical use of timber in those places for which it is particularly suited. He described the density rule for Southern Yellow Pine which is being adopted rapidly by the railways and pointed out its advantages over previous standards. The principal part of his address was devoted to means of protecting timber from unnecessary exposure to the agents of decay and from improper handling. He pointed out those defects most com-

monly encountered, using lantern slides freely to show unfavorable conditions as well as those more satisfactory. The sanitation of lumber yards was particularly emphasized and the statement was made that one yard which has given the subject special attention recently has reduced its losses from an average of 5 to 10 per cent annually to practically nil.

#### SUBJECTS FOR COMMITTEE WORK

The following subjects were selected for investigation and report at the next convention:

1. Organization of the water service department. Economical delivery of water to locomotive.
2. The construction of shop buildings.
3. Erection of plate girder spans with the least interference with traffic.
4. Roof drainage of railway buildings.
5. Repairing and strengthening old masonry.
6. Hand operated devices for lifting, pulling and hoisting.
7. Paint and its application to the exterior of railway buildings.
8. Fireproofing the roofs of railway buildings.
9. Blank forms for water service records.
10. Snow sheds (an individual paper).
11. Efficient methods of handling work and men.

#### CLOSING BUSINESS

Following recent agitation by members of the American Railway Bridge & Building Association and the Maintenance of Way Master Painters Association for the consolidation of the two organizations, the former association invited the Painters Association to consolidate with it. The latter Association, however, declined the invitation, believing that the proper time for this consolidation has not yet arrived.

At the annual election of officers on Thursday morning, the following were selected: President, C. E. Smith, consulting engineer, St. Louis, Mo.; first vice-president, E. B. Ashby, chief engineer, Lehigh Valley, New York; second vice-president, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md.; third vice-president, Lee Jutton, division engineer, Chicago & North Western, Madison, Wis.; fourth vice-president, F. E. Weise, chief clerk to chief engineer, Chicago, Milwaukee & St. Paul, Chicago, Ill.; secretary-treasurer, C. A. Lichty, general inspector, purchasing department, Chicago & North Western, Chicago, Ill. D. C. Zook, master carpenter, Pennsylvania Lines, Ft. Wayne, Ind., was elected a member of the executive committee.

St. Paul, Minn., was selected as the location for the next annual convention.

#### ENTERTAINMENT

A three-hour business session was held on Thursday evening to permit the members and their families to take an automobile ride about New Orleans on Thursday afternoon. A number of the members made an inspection tour of the docks along the river front on the same afternoon. On Friday about 275 members and guests went to Bogalusa, La., on a special train provided by the New Orleans & Northeastern and the New Orleans Great Northern railways to visit the saw mill of the Great Southern Lumber Company. Stops were made en route at the north end of the New Orleans & Northeastern trestle across Lake Pontchartrain to enable the members to examine this structure and at Slidell, La., to visit the plant of the Southern Creosoting Works.

The Bridge & Building Supplymen's Association gave a banquet to the members of the Bridge & Building Association and their families in the Grunewald hotel on Wednesday evening, about 350 being present. On Thursday evening the annual Association dinner was held in the same building.

#### THE SUPPLY ASSOCIATION

The Bridge and Building Supply Men's Association held an attractive exhibit in rooms adjoining the convention hall, 30 firms participating. The exhibits consisted largely of photographs, literature and samples of products.

The officers of this association for the past year were: President, D. A. Bonitz, National Roofing Company, Tona-

wanda, N. Y.; vice-president, J. A. Nealley, Joseph Dixon Crucible Company, Jersey City, N. J.; treasurer, L. D. Mitchell, Detroit Graphite Company, Detroit, Mich.; secretary, P. C. Jacobs, H. W. Johns-Manville Company, Chicago, Ill.

The firms exhibiting, with the character of their exhibits and the names of their representatives are given below.

American Hoist & Derrick Co., St. Paul, Minn.—Illuminated transparent photographs of railway ditchers. Represented by F. J. Johnson and W. O. Washburn.

American Tar Products Co., Chicago, Ill.—Represented by J. L. Spell.

American Valve & Meter Co., Cincinnati, Ohio.—Catalogues of the Poage automatic water column. Represented by J. T. McGarry.

Barber Asphalt Paving Co., Chicago, Ill.—Represented by Robert M. Jordan and Arthur T. Cavey.

Barrett Co., The, New York.—Built up and prepared roofing materials, coal tar products, creosote oil, iron and steel paints and the Holt roof connection. Represented by E. J. Caldwell, C. F. Ames, S. Day, G. R. McVay, W. Wamsley and E. H. Poetter.

Carey Co., Philip, Cincinnati, Ohio.—Represented by C. L. Cockrell and A. Donaldson.

Chicago Bridge & Iron Works, Chicago, Ill.—Photographs and catalogues of steel water tanks. Represented by M. J. Trees, H. C. Brown and H. B. Murphy.

Chicago Pneumatic Tool Co., Chicago, Ill.—Pneumatic tools and hose couplings. Represented by C. E. Walker, J. N. Stebbins and J. W. Lowell.

Detroit Graphite Co., Detroit, Mich.—Represented by L. D. Mitchell, J. L. Hogan and W. D. Waugh.

Dixon Crucible Co., Joseph, Jersey City, N. J.—Photographs and catalogues of graphite paints. Represented by H. A. Nealley and H. A. Van Derslice.

Fairbanks, Morse & Co., Chicago, Ill.—Represented by A. A. Taylor, D. K. Lee, L. D. Matthews, J. George Jones, C. H. Wilson and V. C. Kalar.

Grip Nut Co., Chicago, Ill.—Grip nuts. Represented by J. E. Weatherford.

Johns-Manville Co., H. W., New York.—Asbestos roofing, insulating shingles, steam traps and fire extinguishers. Represented by P. C. Jacobs, J. H. Trent, L. E. E. Hassman and H. G. Newman.

Lehon Co., The, Chicago, Ill.—Roofing and insulating minerals. Represented by Tom Lehon and D. B. Wright.

C. F. Massey Co., Chicago, Ill.—Photographs, blue prints and catalogues of reinforced concrete culverts, pile trestles, portable houses, sewer pipe, etc. Represented by C. F. Massey, C. Gilman and H. E. Burns.

National Roofing Company, Tonawanda, N. Y.—Security Wide-Weld asphalt roofing and Hydroix waterproofing. Represented by D. A. Bonitz and B. A. Flanders.

Otley Paint Manufacturing Co., Chicago, Ill.—Samples of railway bridge steel, refrigerator, car and building paints. Represented by Benj. F. Otley and W. A. Otley.

Patent Vulcanite Roofing Co., Chicago, Ill.—Samples of felt, asphalt and ornamental roofing and asphalt shingles. Represented by A. J. Van Page.

Patterson-Sargent Co., St. Louis, Mo.—Represented by Jos. K. Patterson and W. H. McBride.

Pyrene Manufacturing Co., New York.—Fire fighting appliances. Represented by F. P. Murphy and E. J. Putzel.

The Q. & C. Co., New York.—Derails and tie spacers. Represented by R. B. Quincy and J. V. Wescott.

Shepherd Automatic Switch Co., The, Montgomery, Ala.—Model of the Shepherd automatic switch. Represented by M. L. Shepherd.

Simmons-Boardman Publishing Co., New York.—Copies of the *Railway Age Gazette* and the *Railway Maintenance Engineer*. Represented by E. T. Howson and F. H. Thompson.

T. W. Snow Construction Co., Chicago, Ill.—Represented by T. W. Snow.

Southern Pine Association, New Orleans.—Examples of the correct and incorrect treatment of ties and piling. Illustration of the United States Forest Service density rules for yellow pine. Represented by J. C. Valadie and Dr. Herman von Schrenk.

Standard Asphalt & Rubber Co., Chicago, Ill.—Photographs and catalogues of mineral rubber floors, asphalt, etc. Represented by C. V. Eades.

Texas Company, The, New York.—Ready-to-lay, overlap and built-up roofings, asphalt points and waterproofing compounds. Represented by W. E. O'Neill, J. F. Ryan and G. Musson.

U. S. Wind Engine & Pump Co., Batavia, Ill.—Catalogues of Mansfield and U. S. water columns and Curtis pumps. Represented by C. E. Ward.

At the annual election on Thursday morning the following officers were selected for the ensuing year: President, H. A. Nealley, Joseph Dixon Crucible Company, Jersey City, N. J.; vice-president, L. D. Mitchell, Detroit Graphite Company, Detroit, Mich.; treasurer, P. C. Jacobs, H. W. Johns-Manville Company, Chicago, Ill.; secretary, Tom Lehon, The Lehon Company, Chicago. Executive committee, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; W. H. Pratt, Heath & Milligan Mfg. Company, Chicago, Ill.; M. J. Trees, Chicago Bridge & Iron Works, Chicago, Ill.; A. A. Taylor, Fairbanks, Morse & Co., Chicago, Ill.; C. H. Cockrell, Philip Carey Company, Cincinnati; C. F. Massey, C. F. Massey Company, Chicago, Ill.

**GERMANY'S STEEL OUTPUT.**—Germany's output of steel in August was 1,412,326 tons, compared with 1,365,641 tons in July.



# Meeting of Society of Railway Financial Officers

A Successful Meeting; Papers Read by T. H. B. McKnight, W. H. Myers, G. A. Post and Frank Vanderlip

THE ninth annual meeting of the Society of Railway Financial Officers was held at the Hotel Raleigh, Washington, D. C., on October 18, 19 and 20. The meeting was called to order by the president, T. H. B. McKnight, treasurer of the Pennsylvania Lines West, and after the roll call the members and guests were welcomed to the city by Oliver P. Newman, chairman of the Commissioners of the District of Columbia.

President McKnight made the following address:

## PRESIDENT'S ADDRESS

When the war began all or almost all American financiers were desperately alarmed about the dumping of American securities from abroad on our market here and the frightful effects that would follow, and the New York Stock Exchange was closed for weeks to minimize as much as possible the evil results. When the Exchange was finally opened again with fear and trembling nothing happened, and we have been cheerfully absorbing ever since all the securities that have come from Europe, and they have run into the billions. In addition we have made loan after loan to foreign governments and each went more easily than the one before, so that we have developed an appetite for foreign government securities which no one could have foreseen a few years ago.

Of course, our ability to so easily swallow and assimilate these vast amounts of foreign securities and American securities returning from abroad was due, first, to the fact that the money we thus furnished never really left the country but was used to pay for all kinds of supplies and manufactured products and munitions of war sent to Europe, and, second, to the reduced purchasing by us from foreign countries. When the war ends these conditions will no longer exist, and then what may we expect?

Immigration has nearly ceased and labor is extremely scarce and highly paid, which of course is increasing the cost of living and hence of all our manufactured goods. When the war is over will the flood of immigration be renewed and we be overwhelmed by unskilled laborers driven out of their home countries by the heavy taxes which will surely follow the war? And will the great need of money abroad upset our financial conditions here?

These questions are not merely interesting; they are vital to our life and welfare, and upon their being correctly answered in time depends to a large extent our future prosperity, for unless they are so answered we shall not know how to prepare for the future and may be taken unawares by the changed conditions.

It appears certain that the burden of taxation in all the belligerent countries and those whose military expenditures have been largely increased by mobilizations even though they are not fighting, will be very much heavier for the future and the conditions of living be very hard, so that it would be most natural that the poorer men and those who have lost their homes or their business during the time they were in the trenches will be loath to take up the struggle for existence at home when they can come to America and start under better conditions, as they must begin again anyway. But will they be allowed to leave their native lands? I think not, for each government will need them to pay the taxes, to rebuild the desolated country and restore manufactures, and the country must be repopulated, not depopulated. It seems to me then almost certain that emigration will be discouraged, if not absolutely forbidden, and that such foreign workmen as we receive will be those who escape by stealth. That means

comparatively few new workmen coming to this country for years to come, and consequently a great dearth of unskilled labor and a higher manufacturing cost.

In manufacturing plants this may be to some extent offset by increased use of machinery, but how shall we keep our tracks in order except by the old-fashioned section hand, whom we have seen change from Irish to Slav and Greek, and who may be still further changed until he takes the dusky hue of our Afro-American fellow citizens, or even of our neighboring Greasers. If this reduction in emigration extends also to the women it looks as if our domestic life is also to be changed in some ways. As it becomes more and more difficult to secure men for manufacturing purposes the women may be drawn into that work as they are now in European countries, making it well nigh impossible to get domestic servants within reasonable prices. This scarcity and expense of help in the household will tend to drive out of the house the two things that remain that can go out and yet leave a home—the cooking and the washing—and we shall have apartment houses with common kitchens and dining rooms, and community dining rooms and public laundries. Of course, we do not like to think of these changes, but that will not prevent their coming if conditions force them on us.

The increased cost of manufacturing due to scarcity of labor and higher cost of living will make it very doubtful if we will be able to hold much of the foreign trade for which we are scrambling so hopefully now, for the foreign manufacturers will do anything to get their old trade again and their governments will be back of them in their efforts, for they must have it if they are to rehabilitate their countries. While higher tariffs may prevent dumping foreign goods upon us at cut prices they will not help us to retain the foreign trade we are now so anxious to get.

The end of the war, then, will find us with our trade in munitions and war supplies of all kinds cut off and with the nations now at war actively trying to get back their trade with us and other nations, with the probable result that we shall have a decided falling off in manufactures and a consequent reduction in freight earnings, so that we must be prepared for another season of financial depression of uncertain severity and duration. The only cheerful thing in sight to mitigate the prospective evil is the fact that the foreign manufacturers will find themselves after the war with their plants converted into munition factories, their machinery either gone, adapted for some other use, or out of date, and their skilled workmen dead, crippled or scattered, so that the whole business will have to be built up from the foundations. It may be, too, that some of the present belligerents may find themselves bereft of their mercantile shipping which has been so potent a factor in extending their trade. Then, too, we may be called upon to furnish machinery to re-equip their factories and mills, so that the loss of a large part of our foreign trade and the consequent decrease in manufacturing may not be so marked immediately after the war, but will be progressive. When it comes, however, and finds us paying exaggerated wages and on a high scale of living and spending there must be some unpleasant readjustments.

Another thing that may make great changes in our social and industrial life is the growing feeling that we are living in a fool's paradise unless we make some reasonable and sensible provision against attack by some other nation. The cheerful optimism with which we have believed that because we had no desire or intention to attack any other nation no other nation would attack us has been shaken if not entirely

destroyed by the fate of Belgium and Serbia and France, and it certainly will be the part of wisdom for us to be prepared to defend ourselves against attack by some stronger or at least more aggressive people until some system of preventing war is devised and put into effect that will give us assurance of safety without large armies and navies.

Notwithstanding the strong feeling which many good people have against universal military service, it or at least universal military instruction on the Swiss or Australian plan, which should also include the teaching of a trade to the young men, in addition to making us safe against wanton attack might prove a solution for other problems that confront us and give us a finer, stronger people to build our future race upon. This universal military instruction, valuable as it will doubtless prove, will naturally make the young man somewhat later in getting to work and in other ways will prove a tax to be added to the ones we have now.

To us railroad treasurers one of the most interesting questions raised by the war is, "How will it affect railroad financing?" When one considers the great sums that will be required abroad for the rebuilding of the destroyed cities, farm-houses, roads, bridges and railroads, and realizes that in no other country in the world is there money to lend, one gets some idea of the demands that will be made on the resources of America. Even while the outcome of the war is undecided, billions of bonds of the belligerent countries have been sold in the United States and our people, although looking askance at the earlier issues, are now buying them freely and getting higher rates of return than our domestic securities have been yielding. When the munition business is over and our investing power is decreased we shall find that the American railroads in need of funds for construction, equipment or refunding will have to bid for the money they require against foreign governments whose needs will be so urgent that the question of the rate they have to pay will hardly be considered. There are 15 nations in the war and the few that still stand shivering on the brink, though they have not had actual fighting, have all had to mobilize their armies and keep them ready, which is almost, except for the cost of the ammunition used, as expensive as war.

Most of the foreign national financing in recent years, including the cost of the Balkan war of several years back, has been of a temporary character with the hope that later the notes may be permanently funded, but the internal resources of the different nations will not prove sufficient to digest this floating indebtedness together with the borrowings for the present war and they will eventually have to come to us for help. In addition, our own railroads have for the last 10 years not been able to finance their improvements by stock issues or even by permanent obligations, and there is floating a vast amount of temporary notes which have to be renewed from time to time at high rates. There are also many extensions and improvements which should be made to keep our properties in shape to properly handle the business offered and which would have been made before now if they could have been financed, but under existing conditions of regulation of rates continually downward and wage increases by congressional enactment, who feels like investing money in new stock? And if we borrow for all our improvements how long shall we be able to give good and sufficient security for our loans? And if we have to bid with our unattractive bonds against the government issues of foreign countries bearing high rates of interest where shall we get the money we require and what shall we have to pay for it?

Heretofore large amounts of American standard railroad bonds have been sold in Europe; the people of England, Germany, France and Holland thus furnishing capital to construct and equip our railroads, but after the war in all of these countries those who have any money left will have such opportunities to invest it at home at profitable rates that there will be none to spare for American investment, and we our-

selves shall have to furnish the funds needed here for railroads, roads, houses, power plants, trolleys, water plants and city improvements including school houses, parks and recreation grounds and all the various forms of beneficent and social investments which we are coming to believe are proper for the municipality to make—all of which will have to be financed on bond issues.

In addition our federal government under the realization of the necessity for preparedness to which I have referred will be putting out bond issues to pay for the enlarged navy and for new fortifications and big guns to defend our coasts.

The supply of money for investment each year is limited and consists of the savings of the people, their surplus over living expenses put away either directly or through savings banks and insurance companies. With decreased manufactures and reduced foreign trade, increased cost of living and extravagant habits of spending acquired in these days of war prosperity, it is not reasonable to suppose that we shall have spare capital enough for even our own wants during the next 10 years, certainly not enough to rebuild Europe in addition.

If I am even approximately right in thus reading our financial future it follows that to obtain the money they need the American railways will have to offer large inducements in the way of interest and even then, when the security is not of the best, may have to go without as under present conditions it is not practicable to raise money by sale of capital stock. I sincerely hope the future may not turn out as seems probable to me, but it certainly behooves us to study the question carefully so that we may be prepared for what is to come.

If we know what the conditions of our borrowing are to be a year, two years, three years in advance, we shall be able to do our present financing so as to be prepared for the difficulties, which otherwise may prove to be dangers as well. It is in studying such subjects together so that we may be prepared to wisely advise our companies that one of the great advantages of our society may be found.

#### ADDRESS BY GEORGE A POST

The annual banquet of the society was held at the Hotel Raleigh on Thursday evening. The following is an abstract of the address delivered by George A. Post, president of the Railway Business Association:

On November 20 next in this city hearings will be opened by a joint committee of Congress appointed "to investigate the conditions relating to interstate and foreign commerce and the necessity of further legislation relating thereto," and to report in January, 1917. The Railway Business Association, of which I have the honor to be president, has for many months studied the defects in the present system of regulating railways and advocates a number of specific measures. We have exchanged views with many other business organizations. One such body is the National Industrial Traffic League composed of traffic managers of industrial concerns and traffic bureaus of boards of trade. It has been my privilege to become agreeably acquainted with a number of the leaders in that organization and to have been a guest at their meetings. The league has performed valuable work in promoting co-operation between the shippers and the railways in governmental matters.

The Traffic League recently issued to its members and published in the press a set of questions bearing upon some of the measures which will be advocated before the joint committee of Congress next month. The desire of the league as expressed in this circular was that the members should confer with their companies or with their associations as the case might be and be prepared to express authoritatively at a subsequent meeting of the league the view of those whom they represent.

I have thought it desirable to compose a set of answers to the questions of the league which may serve to stimulate dis-



cussion. What I say is the result of official opportunities for study and conference, but is not official in the sense that every member of our association or even every member of its general executive committee has sanctioned it. I presume some of them would not be prepared at present to assent in detail to propositions which are somewhat novel to all of us and which involve difficult constitutional and legal phases. On the whole, however, I am confident that a majority of my associates concur in thinking that along the general lines indicated lies the wise and safe course for Congress to pursue.

I give the questions of the league verbatim and seriatim with the answer following each question:

1. Q. Shall the league favor exclusive federal control or regulation as opposed to the present dual system? A. Yes, except in matters which are distinctively local, such as taxation, location of stations, speed limit of trains within municipalities, fencing ordinances and grade crossing separation.

The service given in the United States enables producers to compete over a larger area than ever has been known in any other part of the world. Short-line roads of earlier days have been consolidated in long through systems. This enables buyers to obtain quick and regular deliveries and promotes concentration for cheap production while at the same time facilitating competition in the interest of the consumer. The result is that long distance traffic is much the greater part of all traffic. Shippers are able with reference to a predominant part of their output to negotiate with a few railroad systems for through cars and trains covering a territory which may embrace many states. Switching and warehouse facilities at terminals and junctions have been a great aid to rapid-movement of tonnage and hence to enlargement of selling areas. Except in the east the railroad was the first institution established in every town and usually provided itself at comparatively small expense with well situated land to use for terminal purposes.

Since 1907 it has become annually clearer that some tendencies adverse to these were at work. Traffic managers for shippers have increasingly reported a reluctance of railway managers to add to operating expenses by improvement of service. The most serious result has affected terminals. Towns have grown into cities and cities into great metropolitan centers. The cost of land has risen and railways have found it more and more expensive to make their properties keep pace with the growth of business. Inquiry has elicited the explanation that expenses on the existing basis of service have steadily increased without any systematic cognizance of this situation on the revenue side by the various governmental units. The roads have feared to undertake projects in years of good business. They have apprehended that they might either have to cancel at the next recession of traffic facilities once afforded or find their balance sheet with an uncomfortably narrow margin of safety. They have preferred to avoid in many instances establishing such facilities.

A substantial proportion of the increase in operating expenses has been imposed by state authorities and involves duplication of state with federal regulation as well as duplication one state with another. Physical facilities which have been denied to shippers would have entailed an addition to capitalization. In numerous instances inquiry has disclosed that a factor in their disappointment was obstacles placed in the way of security issues by conflicting state regulations. In other cases the market for sale of securities for such purposes was said to have been practically closed because rate regulating authorities ignored the effect of rising expenses upon net income. Several states as well as Congress may in the case of a given railroad make compulsory additions to its expenses.

All of these agencies have authority over its rates. No authority anywhere has responsibility for keeping the expenses within the revenue or raising the revenue to meet the expenses.

Another obstruction to freedom of trade has been the rate policy of several states. These states so regulate tariffs as to build up their own shipping centers at the expense of centers in other states. Alleged discriminations should of course be adjudicated not by one of the parties, in this case a state, but by an impartial tribunal, obviously and necessarily federal. The revenue, moreover, of a railway is the sum of its earnings from all sources. This includes earnings on hauls wholly within a state. If it is the policy of one state to depress rates below the general average the deficit must be taken out of the pockets of people in other states.

One of the brightest chapters in American history is the pioneering which has pierced the wilderness and created new communities for the development of American life and the consumption of American products. This factor has met with a check, apparently more than temporary. Miles of line increased 1915 over 1910 7 per cent. This is no greater than the increase per cent in the years 1895 to 1900, which embraced the depths of industrial blight and painful recovery. Even 1890 to 1895, including two years of depression, showed an increase of 10 per cent; while the increase 1905 over 1900 was 12 per cent and 1910 over 1905, including a panic period, 10 per cent—all these in comparison with 7 per cent, 1915 over 1910. Moreover, the latest years show this check in the most acute degree. During 1911 the number of miles added was 5,407; during 1912, 3,614; during 1913, 3,618; during 1914, 3,077, and during 1915, 1,022.

Curtalement of growth in mileage is undoubtedly due to the same circumstances which have impeded provision of facilities on existing lines. Whatever affects the ability of the railroads to market their securities or the judgment of their managers and financial advisers as to the wisdom of new investment under current conditions has an influence upon the mileage constructed. If expenses, compelled by governments or otherwise, increase and revenues stand still or decline, managers are neither able nor willing to sell stocks and bonds. It is asserted that the attitude of some state governments has repelled construction of mileage within the borders of those states. This is an injury to shippers wherever located since it arrests the creation of new purchasing centers.

Another just complaint with the present dual system is as to the quality of routine administration for the removal of discriminations and other improprieties in rates and service. If recourse is had to state authority there is always the complication of state jealousies and discriminations against the people of other states. Three-quarters and upward of the business done by the people of any state is interstate business. Many times the rate on a service wholly within a state exerts a determining influence upon interstate rates which affect a much larger traffic. It is oppressive for the smaller fraction to control the whole.

Transportation has in the main become interstate. If its regulation were federal the prosperity thereby diffused over the whole business of the nation would prove a greater benefit even to those whose shipments are wholly interstate than any preference which they can obtain by independent state action.

2. Q. Shall the league favor exclusive federal incorporation of all common carriers and federal regulation of the issuance of securities? A. Yes.

From the point of view of the railroad corporations it is intolerable that what is exacted by one state should be prohibited by another and expensive that a road should have to incur the delay of going from one state to another for sanction of an issue which in the end may have over-stayed the market of which it was designed to take advantage. The market for securities in the exchanges of the world is curtailed because such securities can only bear the sanction of one or more states and state prestige is a vague thing abroad if not at home as well.

From the point of view of the general public federal regulation is no less essential. While Congress compels expendi-

tures and the commission regulates rates no federal authority has jurisdiction over the issue of securities which is itself an occasion both for expenditure and for charges upon the shipping public. Some states for many years refrained from giving their railroad commissioners power to order rates changed, but even these states imposed some restrictions upon the issue of securities. The public should if possible be made to feel less uneasy about alleged over-capitalization. This will never come to pass until the fullest publicity at least has been provided under the highest auspices. Stability of rates is an essential to prosperity. The rate fabric will never be stable so long as continual conflict goes on as to the honesty and reasonableness of capitalization.

If security issues are to be regulated federally incorporation should also be federal. Some members of our association while favorable to the federal tendency are not yet prepared to urge that such incorporation should be compulsory. They doubt the constitutional power of Congress in this respect and question the wisdom of exercising that power even if it exists. The greater part of the railway managers have decided to favor compulsory incorporation, even though they must relinquish the valuable privileges which many of them enjoy under state charters.

3. Q. If there is to be exclusive federal incorporation and regulation, what shall be done about taxation? Shall the state continue to tax, or shall the tax be fixed and controlled by the federal government, and then apportioned among the states traversed by the respective railroads? A. The states should continue to exercise directly the function of taxation, making whatever changes in present arrangements may be necessary in order to adjust taxation by the states to federal incorporation.

The people of this country properly regard the taxing power as a local function with which they ought never to part. Leading authorities on taxation seem to be unanimous on this point. The conviction of the people in favor of that policy is deeply rooted and I have not heard anyone advocate federal management of railway taxation. Eminent lawyers differ as to the power of Congress to establish a standard of state taxation, but public opinion should be brought to favor application of the same standards to the taxation of railway property as other property. The railways should enjoy as well as obey provisions aimed to insure equality of all before the law.

4. Q. If exclusive federal control is to be the policy, what shall be done about the police power of the state, the right to regulate hours of service, operation of trains on Sundays and legal holidays, speed limits, fencing, track elevation, etc.? A. So-called police powers should be exercised by whichever jurisdiction is naturally concerned.

Hours of service should be regulated federally. Sunday and holiday restrictions upon train operation should be federal; otherwise ordinances of one state may deny to shippers of another state free access to market for perishable commodities. Limit on speed of trains seems to be within the province of the municipality but otherwise naturally federal. Fencing is obviously a local concern. Track elevation, including all grade crossing regulations, should remain within the joint jurisdiction of the state and the municipality.

5. Q. What changes are necessary in the present act to regulate commerce? Why? A. This question is answered under subsequent headings.

6. If you favor exclusive federal control:

Q. (a) Shall such an act be administered by one commission? A. I am strongly impressed with the proposal that not all the functions now performed by the Interstate Commerce Commission should be vested in it, especially that the commission should be relieved of detection, prosecution and adjudication of infractions of the law.

Q. (b) How many members? How selected? A. The Interstate Commerce Commission has urged that the number

be increased from seven to nine. It has been my observation that the commission has always manifested reluctance to recommend provisions which would involve increase in its appropriation. I would be disposed to accept their judgment on this point. I see no reason why selection of the commissioners should not continue to be through appointment by the President and confirmation by the Senate.

Q. (c) How should such a body be organized? A. I am uncertain what this question is intended to draw out. If it refers to the auxiliaries through which the commission is to operate, this is answered below under (d). If what is meant is the method of selecting the chairman and his tenure as such, I am aware of some sentiment in favor of having the President designate one of the commissioners chairman for a stated term. This would be in effect a return to the practice before the transfer of Martin A. Knapp to the judiciary, at which time the chairmanship by agreement of the commissioners was made a one year office, rotating. This question has great importance as bearing on the efficiency of the work and the continuity of policy, but I do not feel competent to pass judgment upon it. I would favor longer terms and somewhat higher salaries for the commissioners.

Q. (d) If regional, how should the regions be determined? Why? A. Enlargement of the federal scope must be accompanied by a strengthening of the federal mechanism. The commission has been attempting to administer regional routine through examiners. Such auxiliaries must be made more responsible. Our committee is much impressed with the proposal that regional commissions should be created analagous to the reserve banks. It would be our idea that Congress, having obtained the advice of the commission, should prescribe the number of districts and that the commission should define their boundaries with a view to mapping out areas which correspond to traffic movement, entirely ignoring state lines. The law might specifically invite the commission to recommend from time to time changes in the number of districts.

Q. (e) Should the power of the regional commissioners be final or subject to some central body? A. Subject to the Interstate Commerce Commission, in order to insure uniformity of policy throughout the country.

The proposal of regional commissions originates with the railways, whose representative before a committee of Congress explained it. Under that plan findings by the regional sub-commissions would be filed with the Interstate Commerce Commission and if there were exceptions by either litigant these exceptions would be argued; in the absence of exceptions within a specified time the decree from below would go into effect automatically unless otherwise ordered by the Interstate Commerce Commission.

7. If you favor the present system:

Q. (a) Shall the Interstate Commerce Commission be reorganized? Why? A. In the sense indicated I do not favor the present system. The answer to (a) has already been given.

Q. (b) If so, how? Merely by increasing its members with authority to subdivide itself in divisions for separate parts of its work, or should it be largely increased with units sitting permanently in different parts of the country? Why? A. It is learned that what the commission had in mind in asking Congress to authorize divisions of the commission to act for the whole was that various functions to be performed in the main at Washington should be assigned to divisions and not that the commissioners should have territorial divisions. The functions evidently referred to which are to be assigned to divisions of the commission are such matters as valuation, issue of securities, accounting, safety appliances and the like, concerning which the commission as a whole can lay down a policy to be administered by such divisions. Regional administration has been referred to in the answer to 6 (d) and (e).



8. Q. The league desires its members also to discuss and offer suggestions or recommendations upon any phase of this general subject that may be of interest to the member responding. A. It was thought essential before replying to your circular to ascertain authoritatively what are the proposals of the railways.

We are assured that 84 per cent of the gross railway earnings of the country is represented in the Railway Executives Advisory Committee on Federal Legislation, of which the chairman is Frank Trumbull and the general counsel A. P. Thom. Messrs. Trumbull and Thom advocate certain measures not mentioned in the replies already given. Briefly these are:

1. The period of suspension of rate advances should be reduced from a possible aggregate of 10 months under the present law to a maximum of 60 days, the increase to go into effect at the expiration of such time if not already decided, and refund to be made to the shipper if the advance shall ultimately be forbidden.

Is not 60 days a long enough time to deprive the railways of an advance if it shall ultimately be declared that they ought to have had it from the beginning? The shipper is in no way injured if refund is made in case the increase is disallowed. What good reason is there for opposing this amendment?

2. The Interstate Commerce Commission should have authority to fix minimum as well as maximum rates.

A widespread sentiment exists among shippers in favor of this amendment. It was believed by most of us when the power to fix a rate in place of a rate declared unreasonable was conferred 10 years ago that no rate ever could be too low in anybody's interest and that none of us would ever see the day when we would advocate power for the commission to order rates maintained or raised. Experience has shown the contrary. Shippers as well as railroads have reason to desire this power bestowed upon the commission. Shippers find the lack of such authority an obstacle in the adjudication of controversies between shipping centers where the main question is not the level of rates but the relation of one rate to another. What is in the interest of the shipper in that respect is also in the interest of the railroad. The railroads have found that one road of a regional group could prevent the others from adjusting a certain rate upward, possibly with the result of unduly impairing total revenue and also possibly with the effect that the commodity in question paid less than its share of the cost of transportation.

3. The law should specifically impose upon the Interstate Commerce Commission the function, in rate regulation, of considering the effect of rates upon total earnings in the light of expenses and hence the effect upon credit, to the end that the country may be assured of adequate facilities on existing lines and of healthy extension into new territory.

This seems fundamental. It is the commercial phase. It involves a fact often forgotten. Regulate railways howsoever strictly, you cannot regulate the investor and you cannot absolve a railroad from the necessity of making both ends meet. Undoubtedly the greatest defect in regulation as it has been applied since 1907 has been our failure to insist that the government should recognize in this matter the responsibility that goes with power.

In conclusion I desire to express cordial approval of the policy adopted by the league in arranging for its members to confer with their principals before expressing an opinion upon these important measures. No doubt the interchange of views suggested in their circular will tend to draw the heads of enterprises and of associations into the preliminary discussion. The shippers of the country should appear before the Newlands Joint Committee of Congress on or after November 20 upon a platform and through an organization completely representative and competent, not only as to rates and service but as to every element which has to be consid-

ered by those responsible for the management of industrial and mercantile enterprises.

On Thursday morning H. W. Myers, manager of the Kansas City Railroad Collection Bureau, read a paper on the work of his bureau, and on Friday morning Frank Vanderlip, president of the National City Bank, made an address before the society on the railroad situation today. Both of these papers will be published in next week's issue of the *Railway Age Gazette*.

#### ELECTION OF OFFICERS

E. H. Alden, secretary and assistant treasurer of the Norfolk & Western, was elected president of the Society of Railway Financial Officers, succeeding T. H. B. McKnight, treasurer of the Pennsylvania Lines West; F. H. Hamilton, treasurer for the receivers of the St. Louis & San Francisco, was elected first vice-president of the society, succeeding H. E. Suckling, treasurer of the Canadian Pacific; L. S. Taylor, treasurer of the Pullman Company, was elected second vice-president, succeeding D. K. Kellogg, treasurer of the Richmond, Fredericksburg & Potomac, and L. W. Cox was re-elected secretary and treasurer.

The entertainment features of the convention consisted of automobile rides in the morning for the ladies and guests, and late in the afternoon for members, and a ride to Cabin John's Bridge as guests of the president of the Capital Traction Company of Washington. On Wednesday night a reception was held by Mr. and Mrs. H. C. Ansley.

#### FIRST TENTATIVE VALUATION REPORTS ISSUED

The Interstate Commerce Commission has issued the first tentative reports in accordance with the valuation act of 1913, giving the valuation as found by the Division of Valuation of the property of the Atlanta, Birmingham & Atlantic and its related companies, the Alabama Terminal Company and the Georgia Terminal Company, and of the Texas Midland, as of June 30, 1914.

The tentative valuation of the Atlanta, Birmingham & Atlantic is stated as follows:

COMMON CARRIER PROPERTY			
	Cost of reproduction of road and equipment excluding lands		Present value of lands
	New	Less depreciation	
Owned by A. B. & A.....	\$22,716,886	\$18,071,950	\$1,091,886
Leased to others.....	170,754	111,366	13,668
Used by A. B. & A., owned..	22,546,132	17,960,584	1,078,218
Used, leased from others....	1,608,866	1,448,226	1,213,195
Total used by A. B. & A....	24,154,998	19,408,810	2,291,413

The value of the property used by the Atlanta, Birmingham & Atlantic is allocated to states as follows:

	Georgia	Alabama
Cost of reproduction, new. ....	\$12,383,707	\$6,852,881
Cost of reproduction, less depreciation. ....	10,184,690	6,195,360
Present value of lands. ....	1,545,347	746,066

The value not allocated to states, including the equipment, is placed at \$4,918,410 for the cost of reproduction, new, and \$3,028,760 for the cost of reproduction, less depreciation.

The valuation of non-carrier lands, present value including improvements, is stated as follows:

Georgia .....	\$141,782
Alabama .....	3,421
Total .....	\$145,203

Under the head of non-carrier property other than lands, the company owns \$5,000 par value of the stock of the Atlantic Compress Company, \$3,000,000 of the stock of the Alabama Terminal Company and \$1,500,000 of the stock of the Georgia Terminal Company.

The book value of miscellaneous physical property is placed at \$36,058.02, which consists of \$42,632.02 for rails

and other track materials leased to others, less \$6,574 for rails and track materials leased from others.

Aids, gifts, grants of rights of way, and donations are stated as follows: Value at time acquired, \$47,181; present value, \$247,875. In addition, certain counties and municipalities donated sums of money for the purchase of right of way, the deeds for which were made direct to the company, amounting to \$73,060.25 in Georgia and \$12,000 in Alabama.

No other values or elements of value were found to exist and the original cost of the property could not be found. Summary sheets are attached to the report showing the distribution of the above amounts by primary accounts.

The Atlanta, Birmingham & Atlantic was in the hands of receivers at the date of the report. The mileage owned at that time was 633.5 and its total outstanding capital liabilities amounted to \$54,571,176.14, in addition to receivers' certificates amounting to \$4,994,000. The property investment as shown by the books at that date was \$53,325,751.58. The report states that exception is taken to the inclusion in the investment accounts of items aggregating \$25,290,710, and to other items the money value of which cannot be determined. From the records available, it is stated, neither quantities nor costs can be assigned to specific pieces of property. In the discussion of the investment account the report says:

"The price shown to have been paid for the property of the Atlantic & Birmingham Railway is \$2,303,086 in excess of the amount, \$11,492,520, at which that company carried its property. The price shown to have been paid for the road constructed and equipped by the construction company (Atlantic & Birmingham Construction Company), is \$19,264,445 in excess of the \$16,946,758 expended on this account by the construction company, which latter amount included neither contractor's profit nor interest during construction."

In a preface to the report it is stated that for five of the companies now comprising the Atlanta, Birmingham & Atlantic no record whatever could be found and those that pertained to the other three companies were not susceptible of complete analysis.

"In the accounts of the Atlanta, Birmingham & Atlantic," the report states, "the accounting distinction between capital and maintenance was not strictly observed; freight charges on construction material transported over the company's own lines were not accurately recorded and equipment was retired or changed from one class to another without adjusting the record to correspond. These conditions, together with the fact that no record exists of the actual cost of the property purchased, make it impossible to state the original cost to date."

The report includes a discussion of the following general description of the property; physical conditions relating to construction; economic conditions relating to traffic, corporate history; development of fixed physical property; history of capital financing; increases and decreases in stocks, bonds or other securities in reorganizations; aids, gifts, grants and donations; results of corporate operations; investment in road and equipment; cost of reproduction, new, and reproduction less depreciation; improvements in leased physical property; investments in other companies; other securities owned; materials and supplies; Georgia Terminal Company and Alabama Terminal Company.

Analyses of the costs and the methods used in computing them and the division of property between the states are set forth in detail in exhibits attached to the reports.

For the Alabama Terminal Company the value of the common carrier property, which is leased to the Atlanta, Birmingham & Atlantic is stated as follows:

Road, excluding lands, cost of reproduction, new, \$1,493,985; cost of reproduction, less depreciation, \$1,367,411;

lands, present value, \$661,331; non-carrier lands, including improvements, present value, \$166,438.

A similar report for the Georgia Terminal Company, whose property is leased to the Atlanta, Birmingham & Atlantic, shows the following:

Road, excluding lands, cost of reproduction, new, \$903,270; less depreciation, \$830,316; lands, present value, \$604,459; non-carrier lands, including improvements, present value, \$853,811.

The tentative valuation of the property of the Texas Midland is stated as follows:

COMMON CARRIER PROPERTY	
Road and equipment, exclusive of lands:	
Road wholly owned—	
Cost of reproduction, new.....	\$2,601,289
Cost of reproduction, less depreciation.....	2,007,708
Jointly owned—	
Cost of reproduction, new.....	21,951
Cost of reproduction, less depreciation.....	18,208
Equipment—	
Cost of reproduction, new.....	582,071
Cost of reproduction, less depreciation.....	362,940
General expenses—	
Cost of reproduction, new.....	176,693
Cost of reproduction, less depreciation.....	138,561
Total cost of reproduction, new.....	\$3,382,004
Total cost of reproduction, less depreciation.....	2,527,417
Land:	
1,862.52 acres owned and used for transportation purposes....	\$236,689.65
75.87 acres not held for transportation purposes and structures thereon .....	8,619.40

The original cost of road could not be found. The original cost of equipment now in existence is stated as \$528,874.59; of 1,369.91 acres of land purchased as \$68,232.41, and of 492.61 acres donated (cost to the donors) as \$43,103.75. No other values or elements of value were found to exist. The Texas Midland received aids and donations including gifts of right of way amounting to \$69,885.51, not including the contributions of the late Hetty R. Green.

The capitalization of the Texas Midland on June 30, 1914, was \$2,112,000 and it owned 111 miles of line.

Notices of these tentative valuations have been served on the attorney general of the United States, the governors and state commissions of the states in which the properties are located and the railroads. Each party is allowed 30 days from November 1 in which to file a protest with the commission. If no protest is made the tentative values will be considered as final. A specification shall be filed with each protest setting forth in detail the particular things against which the protest is directed. The detailed engineering, accounting and land reports have already been furnished to the railroads and the state commissions.

## WHAT IS THE BASIS OF OUR PRESENT PROSPERITY?

By E. B. Leigh

President, Chicago Railway Equipment Company.

What is the basis of our present prosperity?

To what extent may it be attributed to "war business"?

And if chiefly to the latter, what will be the result of the suspension of "war business"?

"It has been clearly demonstrated that under normal conditions railway purchases measure general business prosperity." In December, 1913, the writer delivered an address on this subject before the Railway Business Association, from which it may be illuminating to quote briefly:

"Inasmuch as the railways of this country constitute its greatest industry next to that of agriculture, with but one thing to sell—transportation; the ultimate consumers of everything they buy, their purchases extending substantially throughout almost every department of business, many of them on a tremendous scale—it must be obvious how potent a factor they are in general business conditions.

"As the iron and steel industry has long been recognized



as being the truest index of general business conditions, and as the statement has been reliably made that the railways consume, directly and indirectly, between 40 and 50 per cent of the iron and steel production of the country, it is manifest that the expansion or restriction of railway consumption must vitally affect this barometer.

"The ramifications of railway purchases make it impossible to classify them in the aggregate. But of those items officially compiled, tabulated and made public, perhaps no one so clearly and typically reflects the railways' general purchasing ability as that of new equipment.

"The number of freight cars built each year taken as a unit, and termed 'railway purchases,' has been projected on the well known chart of the Brookmire Economic Service for the period, 1904 to October 1, 1914, inclusive."

This has been extended to October 1, 1916.

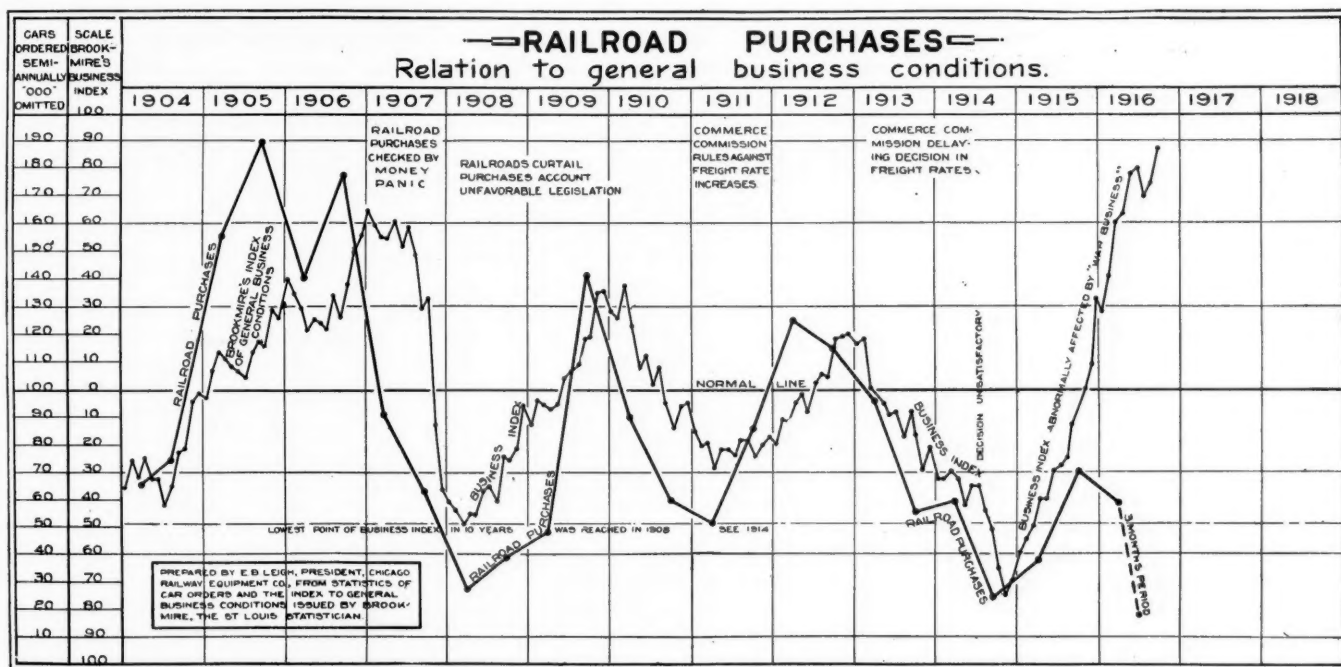
Examination of the accompanying chart will show the relation existing between "railway purchases" and "general business prosperity" under normal conditions; also wherein this logical relation of cause and effect has been sustained even in the presence of more or less abnormal conditions such as the money panic of 1907; legislation unfavorable to rail-

That we are enjoying so great a measure of "prosperity" in the face of the fact that the railways have not been, and are not now, buying in normal quantities, is in no sense a contradiction of the doctrine that "railway purchases measure general business prosperity."

Railway purchases have been, and still are, much below normal, while the basic industry, "steel and iron," has found this new and enormous outlet for its products, thus, for the time being, completely distorting the relation of iron and steel to railway requirements, and the relation of railway purchases to general business prosperity.

With the suspension of "war business" there will be an inevitable reaction; falling of prices, curtailment of output—and with them many problems which manufacturers, merchants, business men and our people generally will have to face.

There is, however, one present-day condition which may be likened to the silver lining of the cloud. Our railways, sorely pressed for additional equipment and other necessities which they are unable to buy because of prohibitive prices for materials or the practical impossibility of securing deliveries, may come into the market to an extent that, in



roads in 1908-9, and the adverse freight rate decision of the Interstate Commerce Commission in 1911, these abnormal conditions thus only emphasizing the fundamental principle.

But at this time the most striking feature of the chart (extended to date) is found in the sharp divergence of the two lines "railway purchases" and "general business conditions" with the advent of the full tide of "war business."

The relation between these two lines had, broadly speaking, followed the normal course, not only up to and throughout the year 1914, but almost to the close of 1915, for it is well known that the effect of the feverish growth of the "munitions" business was not felt until the latter part of 1915.

It was then that the tremendous absorption of the iron and steel production of the country, employed in the manufacture of "munitions," etc. (a large percentage of which had heretofore been used by the railways); our vast exports of the many essentials both of peace and war which Europe could not produce; the radiating effect throughout so many lines of production—all combined to carry the volume of "general business" to an unprecedentedly high point entirely out of harmony with, or relation to, normal conditions.

some degree, should offset the otherwise disastrous effect that such a cessation of "war business" would entail. Unless the railways are encouraged by a logical revision of some of our laws affecting them, and are given the ability to finance their reasonable necessities; then the reaction is certain—modified only to the extent that we may find new outlets for our products, just as we have in the "war" condition.

**THE CANTON-HANKOW RAILWAY.**—The Canton-Hankow Railway, in April, 1916, was built to within about 60 miles of the Hunan border. The number of passengers carried during 1915 was 1,782,376. The freight carried amounted to 99,688 tons. The total receipts of the line were \$387,250, as against \$268,670 during 1914. Structural materials were bought during 1915 sufficient for about 20 new freight cars. These cars are to be made in the company's workshops at Wong Sha, Canton. During the year construction work was completed from the one hundred and thirty-second mile to the one hundred and fortieth mile from Canton, and two more stations were opened in June, one at Hsiu Chow, a city of some 60,000 people and, next to Canton, the most important station on the line.

# The Training of Young Men for Promotion\*

## The Santa Fe Methods of Selecting and Training Recruits for Future Mechanical Department Officers

By F. W. Thomas

Supervisor of Apprentices, Atchison, Topeka & Santa Fe, Topeka, Kans.

THE training of young men for positions of responsibility involves two considerations; the foundation upon which to build and the material with which you are to build. The solution of both of these by the Santa Fe requires a little explanation of the preparation of the raw material from which we may select the stones for the building. Our apprentice system was organized nine years ago and developed along the lines promulgated by G. M. Basford. We do not claim the credit of originating the scheme. We do, however, claim the honor of having put his idea into practical effect, standing by the scheme and backing it up until the infant could stand alone, and today we are reaping some invaluable results—results you cannot measure in dollars and cents.

### THE APPRENTICE SYSTEM

Briefly, our scheme for training boys for our shops, is as follows: We take a boy who has completed grammar school or better and examine him as to his mental make-up. A series of simple arithmetical problems, coupled with the manner of filling out his formal application blank, and a personal interview, give us some idea of the boy's accuracy, industry and alertness. He then goes out in the shop to run the gauntlet of our shop instructors. They find out why he wants to be a machinist instead of a lawyer, or a boiler maker instead of an editor or preacher, if some friend or parent simply sent him to us on account of the good wages paid mechanics, or if he is making application simply because his father was a machinist. We want to find out as much as possible about the boy from the boy himself. We do not ask any letters of reference. We do, however, strongly endeavor to get boys of good, honest parentage. If he passes the shop instructors he next goes to our surgeons and passes a physical examination. We are taking these young fellows in our service for life, and it is well that young men sound in body and mind should be selected.

If the doctor passes him the boy goes to the office of the superintendent of shops, filling out the regular indenture papers and minor's release, is given a letter to the shop foreman, who gives him a shop number, etc., and he is told to be on hand by the time the whistle blows in the morning. He enters the shop next morning. He is not left to wander around or to wait for someone, or to be bewildered by a sea of strange faces, or frightened by whirling belts, moving machines, or unaccustomed noises. The shop instructor meets him, a kindly hand grasps his, a kindly face is looking upon him, a kindly voice is speaking to him. Then a feeling creeps over him: "What a glorious and good world this is"—an exhilarating feeling which each of us has felt the hour we began to work for ourselves.

The apprentice in the shop is constantly under the eye of the shop instructors and is taught how to perform each operation or step of the trade he has been indentured to learn. An exact account is kept of each job performed and the time required to perform it. His shop work is correlated with useful instruction in the apprentice school room. We teach him mechanical and free hand drawing, the elements of mechanics, shop arithmetic, and some other subjects, closely related to his actual shop work. A boiler maker apprentice,

for instance, will have acquired a working knowledge of plane and descriptive geometry. He will be able to give you an intelligent definition of a boiler, the correct name and function of each part. He can calculate the strength of any kind of seam, can figure out the factor of safety of a boiler or any part of it; from a flat sheet he can lay out, mathematically or geometrically, any section and develop it. He is familiar with the Federal rules as to the inspection and maintenance of boilers. He can quickly make you a sketch or a working drawing of a boiler, can lay out, flange, stay, and build a boiler. At 21 years of age he is the equal of a boiler maker of 50 years. Throughout his four years apprenticeship he is hourly watched by general and shop foremen, by shop and school instructors. His weak points are strengthened, his strong features are exercised. Personal characteristic blanks are filled out from time to time which give the supervisor's office a graphic personal record. While the boy is serving his apprenticeship we find out his particular fitness, firmly convinced that the boy, now a man, will perform his duties better when his heart is in the work; if he can be placed on a class of work which he loves, he will certainly do better than if engaged on some work which he does not like.

### RECRUITS FOR PROMOTION

The best worker will not necessarily make the best foreman, this we have long since learned. Those who have given evidence of possessing talent for leadership are selected for development. Possibly and very probably not all deserving ones are selected, but we are pretty sure that only those are selected who have given evidence of such ability. This is our first source of supply. The second is from our special apprentices, who are graduates of engineering schools.

Special apprentices are selected only upon a personal interview. We cannot put much credence in letters of recommendation from professors or influential friends. I do not mean by this that they attempt to deceive. The trouble lies in the fact that they are not really and fully acquainted with the young fellow. There is little or no effort made by our college instructors to find out the real natural talent of the student. We require these specials to work one year on machines, and one year on erecting floor, then we decide whether or not he shall pursue our course for the development for positions of responsibility.

We now have the boy from the public schools who has served his four years journeyman apprenticeship and has become a first-class mechanic, and the college man who has engaged in practical shop work for two years; the pick of two sources for development into our future officers. They must, during their apprenticeship, have been quick to learn, industrious, prompt, honest, readily and effectively amenable to discipline, steady under fire, and popular with officers and associates, and then have some distinctive qualities of leadership.

### TRAINING FOR FUTURE RESPONSIBILITY

We offer each of them the following opportunity: He must serve two months in the boiler shop, familiarizing himself with tubes, stays, patches, front ends, Federal laws, etc., pursuing a course of reading and study of boilers and appurtenances. He next goes to our freight car shop and serves

\*Abstract of a paper presented before the New York Railway Club, October 20, 1916.



two months on trucks, draft gears, body, doors, roof, air brakes and inspection, also pursuing a course of reading and study on car work, M. C. B. rules, etc. Then we send him to a busy roundhouse for four months. He may previously have had roundhouse work but he is now taught the operation of an engine house from the time a locomotive reaches the ash pit until it is headed out on the "ready to serve" track. Cleaning fire, fueling, watering, actually repairing, the handling and distribution of work orders or slips, dispatching, and the various reports made out by the foreman, etc. Here he reads or studies some good books on locomotives. We next find him with the travelling engineer, studying fuel economics, learning to fire, to inspect and operate the engine, to make out the usual road foreman's report, accompanied by an individual study of parts of the machinery, the construction and operation of injectors, lubricators, safety valves, air brake, valve motion, etc. He also familiarizes himself with the Federal and company rules for the inspection and care of locomotives. We next find him at the front door of our back shops or a large roundhouse, for thirty days engaged in inspecting incoming locomotives and thirty days inspecting outgoing locomotives. Once a month he has written a letter covering the work he has done, explaining the operation of certain features, offering suggestions as to shop management or methods, and criticizing local existing conditions when he can offer some remedy. In each branch of the above he must answer 150 questions bearing on the work in hand.

This is called our Special Course For Graduate Apprentices, and it keeps them terribly busy. They are the very busiest young men I know. We have so made this course that it is a trying and severe one, but it is certainly a developing one. A few break down under it or throw it up, but 80 per cent or over pursue it to the end. We do not expect that the two months in the boiler shop will make a boiler maker but we do know it gives an insight into boiler work which will be of vast benefit to the young man when he is made a roundhouse or shop foreman. We don't expect him to become a proficient car carpenter in 60 days, but he has derived sufficient knowledge of cars, car repairing and inspection, and M. C. B. rules to be not entirely dependent upon the car foreman's word or opinion, and so on through the course. It is surprising how much these bright young mechanics can pick up and assimilate of the other trades during that short period. The course of reading, study, and examination questions does not leave much time for the movies, even his best girl will suffer. But we are making men.

The Good Book tells us that God spent nearly the entire week in creating the entire animal, plant, and vegetable life of the world, before He made man. While we have spent nine years in organizing and building up our present apprentice system, it has been less than two years since we have attempted to specifically train men for our future mechanical officers.

#### OPPORTUNITY FOR OUTSIDE TRAINING

To prevent any possibility of our growing stale, we pick a number from this list of special course men and send them east. One year ago we brought six machinists and one boiler maker to the Baldwin Locomotive Works for a period of six months, where they were made assistant department foremen. They were given as much responsibility as they could carry and were changed from one department to another every two months. They acquired a general and detailed knowledge of the plant, executive and operative, from the time the material for a locomotive was ordered and received and on through the plant until it left the works a finished locomotive. They had an opportunity to note the practices of nearly all the roads in this country and many foreign nations. They were given, through the liberality of the Baldwin Locomotive Works, an opportunity of visiting a steel mill and studying the manu-

facture of steel. They were likewise treated with two half days at the Master Mechanics' convention at Atlantic City. I wish publicly to express my appreciation to Mr. Vauclain and his officers for their personal interest and zeal in furthering a scheme which I believe is the best that has been advanced. Every two months the speaker was required to visit these young men in Philadelphia. It is a long way from Kansas to Philadelphia but the Santa Fe believes there is no trip too long or no work too hard, when it comes to developing young men for her service. These young men are back home again. They were not spoiled; they went back to their trade in the shop, but for a few days only. One is foreman of our Dallas terminal, one a roundhouse foreman in Kansas, one in Arizona, one machine foreman in Topeka, one welding engineer in charge of gas and electric welding and one machine foreman in California, all doing well. Seven more have taken their places at Baldwin's.

In like manner we sent four graduate apprentice passenger car men to the Pullman shops to catch on to the latest and best in steel car construction, two young painters to the Pullman shops to acquire the newest and best in painting, graining, and decorating steel passenger cars. Four young fellows are at the Westinghouse Air Brake Company, mastering the manufacture of air brake equipment. The same generous spirit has been shown by the Pullman and Westinghouse companies as was exercised by the Baldwin Locomotive Works. The four car men are back with us, filling positions of responsibility.

Each of the above young men was required twice a month to write me a letter giving in detail their observations and work during the past two weeks. These letters were remarkably interesting and will be of untold benefit to the young men in after years. The training this letter writing gave them could not be obtained so effectively in any other way. It required from two to five days a month for the author to thoroughly read and criticize these letters. The young fellows meet once a week and the letters are read over and discussed by them before sending. No changes are made in the original, though a postscript may be written. It gives each an opportunity of knowing what the other is doing, how he expresses himself, etc.

You may wonder at these details and they may weary you, but they are essential to the subject. You can't go out in your shop and tell your superintendent to make you a foreman in the manner or with the ease he could make an engine bolt or grease cup. You can't pick a horse from the street, send him out to the track and expect him to lead the 2:10 trotters because you have put your bet on him. You would be considered a fool for so doing. If you are going into the racing business you select a horse whose sire has a pure strain of trotting blood for generations back. You go further; you put the colt in the hands of an experienced trainer, who for days and months and years gives him the food which experts have decreed is the right kind, give him the kind of exercise that will best develop enduring wind and fleetness of foot. But you cannot do all this in a day. So we have felt that the material we wish to develop for positions of responsibility must be selected early and trained for five years.

#### COLLEGE SCHOLARSHIPS

Four years ago I was advised that a Ryerson Master Mechanic scholarship vacancy existed, and the appointment would be made in a few months. We looked over the list of available boys and told two to try for it. One of these won. Last year another was awarded, upon a competitive examination, to a Santa Fe apprentice. We simply told a boy to go after it. This year we had several ready and waiting for the competitive examination and a Santa Fe boy walked away with the prize. We have more getting ready for the next one and will win that one too, so long as a competitive examination rules the selection. This is a by-

product of our apprenticeship. It is the result of knowing our boys.

The law is laid down to us that we must not go outside for a mechanical officer. We must promote those who are now in service. The prize is hanging out to them and only when they fail us will we let outsiders enter the race. With this practice in vogue it would be very short-sighted to wait until the job was open to find a man. We believe in having the man ready for the job. We can't have a man ready at a moment's notice unless we are prudent enough to go into the matter a sufficient time ahead.

#### KNOW YOUR MEN

The weakness, or fitness, of a boy is not left to the judgment of one man. It is the result of four years of individual instruction. There is no such thing in our regular scheme as classes. There is no huddling together boys of all kinds, of all the various dispositions, capacity, and intelligence, each boy from the moment he makes application until the day we graduate him into manhood as a mechanic, is a class unto himself, is treated as a unit, and all the instruction we give him in shop and school room is individual. We go further. We have a governing body known as the apprentice board, composed of our general foreman, department foremen, gang foremen, shop and school instructors, who meet as a trial court to pass on each boy eight times during his apprenticeship. This board is as fair and honest and equally as anxious to mete out real justice as any court or body of men that ever assembled to pass judgment on a fellow man. Religion, politics, poverty, or pull never sway them one iota. If the boy is fit they pass him. If he is a misfit he goes, and no power can save him. Like our courts he may get a new trial. His case may be deferred, but justice will find him. That board is even more anxious in removing the ill-fitted and talentless boy than it is to encourage and help the genius. It is deemed a crime against the railroad, a crime against society, a crime against the boy's young life to require him to stay and attempt to learn a trade when all his talent and all his ambition lies in other channels. When a boy completes his apprenticeship we know him and his capabilities. He may not be a leader, he may not be a world beater, but we know what he *can* do and where best to use him.

We have in our apprentice regulations of 22 articles, only two don'ts for the boy. We say he must not smoke cigarettes as the tendency of this practice is towards dishonesty. We say he must not drink for who wants a booze fighter? The other 20 articles are there to safeguard the boy.

When we graduate an apprentice we continue a watchful supervision over him. If he remains at his graduating shop the local instructors keep an eye on him, helping and advising him when necessary. If we transfer him to a distant shop his "follow-up" card is sent ahead to the instructor, who aids him in getting located and in securing a good boarding place, etc., making his first hour in the new town a pleasant one. In fact, the first person a graduate calls to see when entering any of our shops, is the apprentice instructor. He will be assured of one person at that place who will be interested in him. If he leaves the road, we still follow him. It may cost us a few postage stamps but the information is worth the stamps. So we have pretty nearly a perfect record of all our graduates. The location of 150 who have left us is as follows: On adjacent or connecting roads, 57; on distant roads, 14; in Canada, 4; "Somewhere in France," 2; in Panama assisting in operating the canal, 2; in garages, 37; in contract shops, 14; in business for themselves, 12; in the navy, 8.

The first position after leaving the ranks is the most trying of the young man's life. It is here he needs counsel and advice from old heads. We are prone, when entering on a new job, to try to do too much, to turn too many things upside down, to make a record the first month. Right here is where the young man is liable to fail, and a steady, guiding hand

is needed to balance him. A master mechanic who had promoted a young fellow to a roundhouse foremanship at an important terminal, told me that for one solid week he spent eight of the ten hours per day in that house. That week made the young man one of the best roundhouse foremen on the system.

An incident recently occurred at Topeka which illustrates the point I am trying to drive home, i. e., knowing your men. The writer makes a monthly report showing number and location of all apprentices, etc. In this report for August was the name of one young boiler maker leaving the service, and the cause of his leaving. Our chief mechanical officer was much perturbed, and called in the superintendent of shops, boiler foreman and his assistant, two boiler shop instructors and the supervisor of apprentices for a conference over this young graduate apprentice leaving the service. I only mention this to emphasize that when such officers can and do spend one-fourth of an entire working day finding out why one young boiler maker had quit, you will find an organization which knows its men and is building for the future.

#### WHAT APPRENTICESHIP HAS ACCOMPLISHED

We are expecting good results from our apprentice graduates who have won the Ryerson scholarships. These young men had about completed their apprenticeship, are thoroughly equipped in practical shop and machine operations and are thoroughly familiar with the locomotive. They are now at first-class engineering schools. Their technical knowledge will mean something to them. The application of mechanical devices and mechanical laws will all appear plain and, best of all, be useful to them.

Our scheme is not complicated, on the contrary it is simple. It has not involved any revolution of our shop management. It has, however, demanded the individual effort of the writer, the co-operation of our mechanical officers, and the moral and official backing of all our executives from the president down. Has the game been worth the candle? Let me briefly recount the benefits we have enjoyed. From our apprentice system we have graduated over 900 first-class, skilled mechanics into our shop forces, trained and educated for Santa Fe work in Santa Fe ways, who in skillfulness, in general intelligence, in resourcefulness, in loyalty, are the superior of any equal body in similar vocations from any railroad or corporation of any place or any time. The present apprenticeship system has improved the whole moral tone of our shops. It has been the means of abolishing rawhiding and mule-driving. The use of profanity by officers to men has practically ceased, and the violation of Rule G is rare.

Of the graduates 72 per cent. are in service today. When you think of the fact that the average turnover of men in the shops and manufacturing plants in the country is three and one-half years, this is a flattering showing. Of the 72 per cent who have remained with us, over 100, or 15 per cent, have been promoted to some position of responsibility and we have others ready and waiting. The past year has been one of unusual activity, the biggest year in our history: more trains moving, more cars loaded, more engines turned than any previous year; yet we have not employed a mechanic from the outside for more than 12 months, and at our principal shops, Topeka, Kansas, no skilled mechanic has been employed for over two years. These are the fruits of our recruiting and training system. Can you beat it?

#### DISCUSSION

G. M. BASFORD (President, Locomotive Feedwater Heater Company): Several reasons are sure to be advanced to show why the Santa Fe plan will not work elsewhere. Some people think that it will not be satisfactory in a small organization. It is satisfactory in small organizations. Some will say that the labor union limitations on apprenticeship will not permit of such a plan. Is this a reason for not providing for such numbers as the unions do permit? Others will say that the Santa Fe does not have competition with ammunition



plants, and other plants. Is not this the more reason why railroads having such competition should do even more than the Santa Fe has done to hold their boys? There can be no excuse, no justification, for failure to train men for the future. God help you and your successors if you do not do as the Santa Fe has done. How can you sleep nights until you have started this work? How can you feel sure of your own position until you have done this?

Everything the railroad uses is bought on specifications. It is considered necessary in order to secure what is wanted and what is paid for. But who selects the men? Where do they come from and of what quality are they? Construction work is controlled by specifications, but who constructs your personnel and how is it done? Clerks do the best they can in selecting raw recruits, but is it safe to place this great responsibility upon a clerk? Is it wise to allow him to accept or reject the man who may one day be your president?

Lacking constructive methods of picking recruits, training them and promoting them, it is no wonder that railroad presidents have told me that they did not know where to turn to find the men they need.

In nine years the Santa Fe has laid a grand foundation for the future, but the structure itself is only beginning. In time this great plan will be extended. It will not be complete until it embraces all departments. When this is done we shall not have difficulty in pointing to a truly great, efficient and perfectly balanced organization. Thorough training of well selected recruits is not all the Santa Fe does. It is fruitless to train men unless the organization is prepared to receive the product of the training. The promotion is as carefully handled as is the training. If it had not been, the graduates would scatter promptly. The boys will not quit if they can be shown that they cannot afford to quit.

Note the record of Santa Fe boys in winning the scholarship so generously provided for 14 years by the firm of Joseph T. Ryerson & Son. They have won it three times out of five. The best college men for railroads will be those from the ranks who win scholarships. This suggests the solution, and I believe the only solution, of the problem of college men on railroads. I hope the day will soon come when both large and small railroads will offer scholarships as prizes for their apprentices—in all departments. But some railroad organizations will change their methods of promotion if they are to hold such men afterward.

The speaker omitted to state that the Santa Fe success is due to the inspired individuals who started it and who had lived with it, as John Purcell, J. W. Kendrick, W. B. Storey and F. W. Thomas have done. Its foundation was laid many years ago when John Purcell formed his apprentices at the Fort Madison shops into a class of which he was the instructor. The class met nights and the instructor personally supplied accommodations, books and drawing materials. The larger work followed a single interview with the operating vice-president, J. W. Kendrick, who found ready support from President Ripley. It acquired fresh impetus and continued able support from Mr. Storey. Mr. Thomas did the work and he did and is doing it nobly, with Mr. Purcell as leader and counsellor and personal director. Inspiration at the top of the organization is the starting point. Many failures occur for lack of this essential. When the man higher up pounds the table and says, "I must have trained men. I'll discharge any officer who will not at once begin to train his own successor"—then you are ready to begin. The next step is to find an F. W. Thomas.

The new apprenticeship has proved itself. This, however, is only the beginning. Its field is every department and every office in the organization. When this truth is known railroads will come into their own. They will have better men and will keep their best ones, and what is more, employers and employees will better understand each other.

You are not advising your own son or the son of your best friend to enter the mechanical department of a railroad

for a career. Think deeply of this. It is my opinion that Mr. Thomas has the solution of the question—"What is the matter with the mechanical department?"

C. W. Cross (vice-president Equipment Improvement Company): The educating and training of young men in all departments of railway service is so tremendously important that it demands the best thought and effort of those in charge of the administration of our railroads. The Santa Fe plan, both as a whole and in its details, is excellent, but may have to be modified in some respects to meet local conditions. As is evidenced from Mr. Thomas' paper, the providing of a successful plan for apprenticeship is only a part of the task. The greatest measure of real profit to the railroad will be realized only when conditions are such as to attract and hold the graduate apprentice in service. It will be contended that the railroads cannot afford to meet the competition for skilled mechanics on the part of industries in manufacturing districts. Obviously the railroads must have a good supply of skilled mechanics if they are to operate efficiently and economically. It will be necessary to pay the graduate apprentices on the same basis as journeymen. Not only this, but the more deserving and ambitious ones must realize that they will be advanced to subordinate administrative positions if they make good. While the average boy has been accused of giving too much weight to immediate financial returns, such a statement is open to very serious question. In all probability, if conditions are made favorable and there is a spirit of enthusiasm in the organization and possibility for advancement, he will realize its importance and take it into consideration when more attractive financial inducements are offered him elsewhere.

The best results can only be obtained when such conditions confront the graduate apprentice and when the entire plan of apprenticeship is handled in a dignified, businesslike manner, with no appearance of paternalism, and with a thorough understanding that the company expects and demands expert service from those training for the work, for which it is willing to pay liberally.

Jacob H. Yoder, supervisor of apprentices, Pennsylvania Railroad, briefly outlined the Pennsylvania system of apprenticeship and emphasized the fact that it is designed primarily to provide an adequate supply of mechanics for the shop, rather than recruits for promotion. The apprentices are divided into three classes: regular, first class and special. The first class is made up of the exceptional regular apprentices, who are selected for broader training, including car work, locomotive firing, etc., these men being available for promotion to minor positions of responsibility. Members of this class are furloughed to attend college if they so desire and may return to the road as special apprentices. Special apprentices are college graduates.

E. R. Larsen, supervisor of apprentices, D. L. & W., spoke of the necessity of education in the broad sense, the methods of acquiring it, whether in college, through a correspondence school or through one's own personal efforts not being of prime importance. He stated it as his belief that the best results from college trained men may be obtained if they serve a regular apprenticeship course first and receive their college education afterwards.

In closing the discussion, Mr. Thomas stated that the entrance requirements for the regular apprenticeship course on the Santa Fe are very flexible, an applicant who has had the advantages of a high school education being examined much more rigidly than one who has not been beyond the grammar schools, the purpose being principally to discover how he has availed himself of his opportunities. He also emphasized the importance of providing ample shop instruction. This cannot be left to the foremen, who are usually too busy with other duties directly bearing on the output of the shop to give much attention to the work of the apprentices. Shop instructors are therefore necessary.

## General News Department

The freight house of the Southern Pacific at Houston, Tex., was damaged by fire on October 21 to the amount of \$12,500.

A southbound express train of the Atchison, Topeka & Santa Fe was stopped by robbers near Bliss, Okla., on the night of October 18, and an express messenger was shot and killed.

Near Buffalo, N. Y., on the night of October 19, five robbers stopped a freight train of the New York Central and, holding the trainmen at bay with revolvers, robbed a car of a large quantity of clothing, and carried it off in an automobile truck.

St. Elmo Massengale, of Atlanta, has been appointed a member of the special commission of the state of Georgia which was appointed to see about selling the Western & Atlantic Railroad, owned by the state. He takes the place of J. L. Hand, deceased.

The Grand Trunk Railway of Canada, following extensive negotiations, has increased the pay of locomotive runners. An unconfirmed statement says that the increase amounts to 15 per cent. The pay of other trainmen on that road was increased not long ago.

From a circular issued last Tuesday by the Baltimore & Ohio it appears that General George F. Randolph, who has been appointed commissioner of the railroads in Official Classification Territory, will continue to be traffic vice-president of the Baltimore & Ohio lines but, apparently, with no active duties.

Charles H. Mansfield, locomotive engineer of the express train which ran into a preceding local on the New York, New Haven & Hartford, at Bradford, R. I., April 17, last, when five persons were killed, has been tried for manslaughter and, on October 21, was acquitted. The trial lasted four weeks. The jury deliberated seven hours.

At a crossing of a much-traveled highway with the tracks of the Pacific Electric Railway, in Los Angeles, California, automobiles are compelled to come down to a low speed by the unevenness of the roadway. The city engineer has built into the pavement a series of humps for a distance of about 30 feet, approaching the railway tracks.

The Canadian Pacific is exhibiting a collection of toys and novelties at the expositions which are being held this season at Quebec, Que., Toronto and London, Ont., which were imported from Europe before the war, many of them being "made in Germany." The exhibits are intended to encourage the manufacture of these articles in Canada.

The State Department at Washington has ordered an informal investigation of conditions surrounding recent protests entered by the Japanese and Russian governments in China against plans of American capitalists for railroad and canal construction in northern China. The United States legation at Peking has been asked to forward a report on the protests.

One of the 18 western railroads negotiating with shopmen over proposed wage increases—the Chicago & Alton—has come to an agreement with its men. It has granted an increase of 2½ cents an hour to all skilled mechanics and 2 cents an hour to apprentices, effective August 16. It has also granted a nine-hour day to all shopmen.

A coroner's jury at Detroit, Mich., has found the Grand Trunk Railway to be guilty of negligence in connection with the accident on a street crossing in that city, October 1, when a locomotive ran into an electric car and ten persons were killed. The jury declares that the gates were not closed, that the gate man at the crossing was incompetent, and that he was asleep at his post.

The Southern Railway, in connection with double track work between Orange, Va., and Central, S. C., has eliminated 93 highway grade crossings. Thirty-eight were supplanted by overhead bridges, 33 by underpasses, and 22 by changes in the route of public roads. In all construction work the fixed policy of the Southern is to separate important highway crossings wherever practicable.

The Chicago, Rock Island & Pacific also has reached an agreement with its men. It has granted an increase of 2½ cents an hour, flat, for mechanics and their helpers and helper apprentices, and 1½ cents an hour for other apprentices. The present working conditions are to continue with the exception that men engaged in rebuilding and repairing cars will work nine hours a day instead of ten.

W. M. Acworth, the English railway publicist, has been appointed a member of the Canadian Board of Inquiry, chosen to study the railway situation in that country, in place of Sir George Paish, who, because of ill health, is unable to leave England. A. H. Smith, president of the New York Central, and Sir Henry Drayton, the other two members of the Board, are now engaged in the preliminary work of the investigation.

In a formal statement issued last week, the controller of the city of St. Louis advocates the leasing of the municipal bridge to the Terminal Railroad Association of St. Louis and the acquisition of the upper deck of the Eads bridge by the city. The plan is to exact from the Terminal Association a rental sufficient to cover the interest on the \$6,250,000 worth of bonds which have thus far been issued for the construction of the uncompleted "free bridge." The interest on this amount is \$340,000 a year. According to the figures presented, the income of the Terminal Association from the upper deck of Eads bridge amounts to \$200,000 a year.

### Great Northern to Electrify

It is reported that the Great Northern is making extensive plans for the electrification of about 300 miles of its main line between Spokane, Wash., and Seattle. The power for running the electric locomotives will be supplied from a hydro-electric station probably located on the Chelan river. The problem of furnishing sufficient electric power for operating the trains over the heavy mountain grades on this section of the Great Northern involves the raising of the level of Lake Chelan so as to provide a greater head for the power plants and also to provide sufficient water storage capacity. Ralph Budd, assistant to L. W. Hill, president of the Great Northern, has announced that the company is working on the plans of the electrification, but it does not intend to start work on the project at once, as considerable time will be required to work out the details. The heavy mountain grades and the dense traffic on the 300-mile section of the Great Northern west of Spokane are the main reasons for the decision to electrify. In the opinion of the railroad officers, electrification is the only satisfactory solution to the problem.

### Traveling Engineers' Association

The twenty-fourth annual convention of the Traveling Engineers' Association was held at the Hotel Sherman, Chicago, October 24 to 27, inclusive, President J. R. Scott, assistant superintendent of locomotive performance, St. Louis & San Francisco, presiding.

The following is a list of exhibitors:

American Arch Co., New York.—Represented by Le Grand Parish, S. G. Allen, W. L. Allison, H. D. Savage, J. P. Neff, A. W. Clokey, G. M. Bean, R. J. Himmelright and J. T. Anthony.

American Steel Foundries, Chicago.—Vulcan trucks, Simplex couplers, Economy draft arm, Vulcan brake, Ajax, Hercules and Vulcan brake beams and Simplex truck column, Atlas safety guard, Third Point brake beam support, Simplex reversible and adjustable complex pocket. Represented by W. A. Wallace, W. G. Wallace and J. G. Russell.

Ashton Valve Co., Boston, Mass.—Gages, safety valves, whistles and gage-testing devices. Represented by J. W. Motherwell, J. F. Gettrust and H. O. Fettinger.

Barco Brass & Joint Co., Chicago.—Barco engine and tender flexible connection for air, steam and oil, Barco automatic smoke box, blower fitting, Barco flexible joints. Represented by F. N. Bard, C. L. Mellor and L. W. Millar.

Bird-Archer Co., New York.—Boiler compounds. Represented by L. F. Wilson, J. M. Robb, C. J. McGurn, J. A. McFarlane, C. A. Bird and J. Shaw.



Boss Nut Co., Chicago.—Lock nuts. Represented by J. A. MacLean, J. W. Fogg and Cliff Boumont.

Chambers Valve Co., New York.—Model. Represented by F. H. Clark, F. S. Wilcoxon and E. L. Nusz.

American Flexible Bolt Co.—Flexible bolts. Represented by C. A. Seley, W. F. Heacock, R. W. Benson, L. W. Widmeier and M. M. McCallister.

Anchor Packing Co., Philadelphia, Pa.—Fibrous packing for throttles, air pump, etc. Represented by J. P. Laudreth.

Baldwin Locomotive Works.—Photographs. Represented by A. S. Goble.

Chicago Car Heating Co., Chicago.—Steam hose couplers, pressure-reducing valves, steam traps, stop valves, steam gages and end train pipe valves. Represented by E. A. Schreiber, R. P. Cooley and E. E. Smith.

Chicago Pneumatic Tool Co., Chicago.—Pneumatic tools. Represented by J. C. Campbell and C. E. Walker.

Chicago Railway & Mill Supply Co.—Economy locomotive balanced fire door. Represented by A. W. Gillespie and A. W. Birnesky.

Commonwealth Supply Co.—Lewis reverse gear. Represented by S. H. Lewis.

Dearborn Chemical Co., Chicago. Represented by J. D. Purcell, G. R. Carr, J. H. Cooper and I. H. Bowen.

Detroit Lubricator Co., Detroit, Mich.—Detroit automatic flange lubricator. Represented by A. G. Machesney.

Economy Devices Corporation, New York.—Rushton screw reverse gear.

Casey-Cavin reverse gear, Ragonnet reverse gear, Universal valve chest and radial buffer and engine truck. Represented by H. F. Ball, Joseph Sinkler, J. L. Randolph and J. L. Bacon.

Edna Brass Manufacturing Co., Cincinnati, Ohio.—Injectors, lubricators, boiler checks, water gages, coal sprinklers and fire extinguishers. Represented by E. O. Corey and H. A. Glenn.

Equipment Improvement Co., New York.—Markel locomotive devices, Wine side bearings and Trojan packing. Represented by F. H. Clark, C. W. Cross and A. A. Schafer.

Flint & Chester, Inc.—National graphite lubricators, locomotive fuel weighing device and Radbore head. Represented by D. J. Lewis, C. E. Foyle and L. S. Watres.

Franklin Railway Supply Co., New York.—Franklin fire-door. Represented by C. W. F. Coffin, W. H. Coyle, R. Coburn and S. Rosenfelt.

Galena Signal Oil Co., Franklin, Pa.—Represented by J. E. Linahen, W. J. Walsh, W. Holmes, J. A. Roosevelt, G. R. McVicar, W. O. Taylor, D. L. Eubank, C. B. Royal, W. E. Brumble, M. M. Meehan, J. S. Brown, F. B. Smith, J. A. Graham, J. G. Arn and C. McNair.

Garlock Packing Co., Palmyra, N. Y.—Garlock packing. Represented by W. G. Cook and C. W. Sullivan.

Garrett-Callahan Co.—Boiler preservative. Represented by E. V. Sackett and A. H. Hawkinson.

Greene, Tweed & Co., New York.—Packings. Represented by N. B. Nickerson.

Henry Manufacturing & Grease Cup Co., Terre Haute, Ind.—Grease cups. Represented by M. Henry.

Hunt-Spiller Manufacturing Corporation, Boston, Mass.—Hunt-Spiller gun iron. Represented by J. G. Platt, V. W. Ellet, J. M. Monroe, H. McB. Parker and E. J. Fuller.

Johns-Manville Co., H. W., New York.—Manual and automatic slack adjusters for brake equipment, J. M. expander rings, steam traps, packings, fire extinguishers and pipe coverings. Represented by J. E. Meek, J. C. Younglove, George Christenson and E. H. Wallard.

Kelley-Wood Safety Locomotive Side Curtain Co., Chicago.—Locomotive side curtain. Represented by W. F. Kelley.

Leslie Co., The, Lyndhurst, N. J.—Unito coupling nuts and steam heat regulators. Represented by J. S. Leslie and J. J. Cizek.

Liberty Manufacturing Co., Pittsburgh, Pa.—Locomotive arch tube cleaners. Represented by C. L. Brown and E. L. Davis.

Locomotive Feed Water Heater Co., New York.—Locomotive feed water heater. Represented by G. M. Basford.

Locomotive Pulverized Fuel Co., New York.—Represented by J. E. Muhlfeld and George Clenden.

Locomotive Stoker Co., Pittsburgh, Pa.—Photographs. Represented by W. S. Bartholomew, C. F. Street and W. G. Clark.

Locomotive Superheater Co., New York.—Model of welded superheater unit, pyrometer and grinding tools. Represented by John Bell, W. Boughton, W. A. Buckbee, G. Fogg, C. D. Hilferty, B. G. Lynch, S. MacDonald, A. C. McLachlan, J. E. Mourne, R. M. Ostermann, R. R. Porterfield, G. E. Ryder, G. E. Spangler, W. G. Tawse, C. N. Wickham, F. R. Fitzpatrick, Pat Keenan and Harry Spicer.

Long, Jr., & Co., Charles R., Louisville, Ky.—Represented by Harry Vissering, G. S. Turner and W. H. Heckman.

Manning, Maxwell & Moore, Inc., New York.—Inspirators, valves and gages. Represented by C. L. Brown and J. C. Bryan.

McCord & Co., Chicago.—Lubricators. Represented by O. H. Neal.

Mudge & Co., Chicago.—Mudge-slate front end. Represented by G. W. Bender and B. W. Mudge.

Nathan Manufacturing Co., New York.—Injectors, lubricators, boiler checks and boiler supplies. Represented by J. S. Seeley, W. R. Walsh, G. Royal, J. C. Currie and Harry Neville.

National Boiler Washington Co., Chicago.—Safety-first fire door. Represented by H. A. Varney.

National Malleable Castings Co., Cleveland, Ohio.—Miniature journal boxes, couplers, coupler pockets, hand brake mechanism. Represented by J. J. Byers.

National Tube Co., Pittsburgh.—Valves and Fittings.

National Railway Devices Co., Chicago.—Shoemaker fire door. Represented by J. G. Robinson and C. J. Gunnison.

Ohio Injector Co., Chicago.—Ohio injector, Chicago injector, Chicago flange oiler, Chicago automatic drifting valve, Chicago lubricator, Chicago water glass protector, Chicago boiler check and Chicago hose strainer. Represented by W. S. Furry, F. W. Edwards, F. B. Wiperman and A. C. Beckwith.

Okadee Co., Chicago.—Blow-off cocks, tank hose and strainer drain valve. Represented by A. G. Hollingshead, Harry Vissering, G. S. Turner and W. H. Heckman.

O'Malley-Bearé Valve Co., Chicago.—Multi-plate valves. Represented by E. O'Malley and T. O'Malley, W. M. Leighton, B. C. Hooper, J. M. Gallagher and E. A. Woodworth.

Oxweld Railway Service Co., Chicago.—Represented by C. B. Moore.

Paxton-Mitchell Co., Omaha, Neb.—Metallic packing. Represented by J. T. Luscombe.

Perolin Railway Service Co., St. Louis, Mo.—Represented by C. L. Villey.

Pilliod Co., The, New York.—Baker valve gear. Represented by K. J. Eklund and F. S. Wilcoxon.

Pocket List of Railroad Officials, New York.—Represented by C. L. Dinsmore.

Pyle-National Co., Chicago.—Young locomotive valve gear and Pyle-National electric headlight. Represented by R. C. Vilas, W. Miller, J. Will Johnson, J. E. Kilker, O. W. Young, W. T. Bretherton, R. L. McIntosh and F. Kersten.

Robinson Co., Boston, Mass.—Exhaust nozzle. Represented by H. M. Parker.

Railway Review, Chicago.—Represented by C. L. Bates.

Sellers & Co. Inc., William, Philadelphia, Pa.—Injectors and boiler fittings. Represented by S. L. Kneass, G. M. Wilson, L. H. Burns and John McClintock.

Simmons-Boardman Publishing Co., New York.—Copies of *Railway Age Gazette* and *Railway Mechanical Engineer*. Represented by R. E. Thayer, L. B. Sherman and F. H. Thompson.

Southern Locomotive Valve Gear Co., Knoxville, Tenn.—Southern valve gear. Represented by E. L. Chollman and H. A. Kibby.

Standard Heat & Ventilation Co., New York.—Econotherm for utilizing exhaust steam from air pump for train heating. Represented by C. F. McCuen and C. C. Post.

Storrs Mica Co., Owego, N. Y.—Represented by C. P. Storrs.

Tyler, W. S., & Co., Cleveland, Ohio.—Drafton spark arrester. Represented by J. H. Jackson and A. D. Busch.

United States Metallic Packing Co., Philadelphia, Pa.—Metallic packing. Represented by M. B. Brewster and Elliott Curtiss.

Vissering & Co., Harry, Chicago.—Metallic packing and bell ringer. Represented by Harry Vissering, G. S. Turner and W. H. Heckman.

Western Railway Equipment Co., St. Louis, Mo.—Locomotive devices. Represented by Sterling Campbell.

Westinghouse Air Brake Co., Pittsburgh, Pa.—Special suction strainer for air pumps, enameled reservoirs, Parasite pump governor. Represented by L. M. Carlton, W. M. Sleet, A. K. Homeyer, J. A. O'Malley, W. V. Turner, S. J. Kidder, L. Wilcox and C. C. Farmer.

White American Locomotive Sander Co., Roanoke, Va.—Graham-White perfect sander. Represented by W. H. White.

Union Draft Gear Co., Chicago.—Miniature draft gear and photographs. Represented by W. G. Krauser, J. E. Tarelton P. C. Jacobs, H. A. Waldron and W. D. Otter.

Universal Valve Co., Chicago.—Universal non-packing valves and swivel joints for locomotives. Represented by T. O. Shillinglow.

### Dining Car Superintendents

The American Association of Dining Car Superintendents held its annual convention at New Orleans, La., on October 20. E. V. Baugh, superintendent of dining cars of the Baltimore & Ohio, was elected president for the coming year, and E. H. Thayer, of the St. Louis-San Francisco, was elected vice-president. Howard Boardman, superintendent of dining car service of the Delaware, Lackawanna & Western, was re-elected secretary-treasurer. The executive committee was elected as follows: J. R. Smart, of the New York Central Lines, and retiring president, chairman; I. A. Canning, of the Erie, and C. H. Jennings, of the St. Louis Southwestern. Among the subjects discussed at the convention were the kinds of fuel best adapted for dining car use, the rising cost of food, refrigeration, sanitation, ventilation and service. The association will convene at San Francisco, Cal., in 1917.

### American Railway Association

The fall session of the American Railway Association will be held at the Brown Palace Hotel, Denver, Colorado, Wednesday, November 15, 1916, at 11 a. m. Reports will be presented by the following committees: The executive committee, the committee on transportation, the committee on maintenance, the joint committee on automatic train stops, the committee on relations between railroads; the committee on the safe transportation of explosives and other dangerous articles, the committee on electrical working, the committee on legal and traffic relations, the special committee on the prevention of accidents at grade crossings, and the committee on nominations.

### Railway Business Association Dinner

It is announced that the annual meeting of the Railway Business Association will be held at the Waldorf-Astoria Hotel, New York, on January 16, 1917. The sessions will include a business meeting at 11 a. m., election of officers at 1:30 p. m., and dinner at 7 p. m. promptly. The program of speakers will be announced later.

## MEETINGS AND CONVENTIONS

*The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.*

- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.**—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, January, 1917, New York.
- AMERICAN RAILWAY ASSOCIATION.**—J. E. Fairbanks, general secretary, 75 Church St., New York. Next meeting, November 15, 1916, Brown Palace Hotel, Denver, Colo.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.**—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 23-25, 1917, New York.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next annual convention, October 31 to November 3, La Salle Hotel, Chicago.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.**—G. P. Conard, 75 Church St., New York. Next meeting, December 12-13, 1916, Atlanta, Ga.
- CANADIAN RAILWAY CLUB.**—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.**—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.**—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.**—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.**—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.**—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.**—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.**—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.**—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY BUSINESS ASSOCIATION.**—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1916, Waldorf-Astoria Hotel, New York.
- RAILWAY CLUB OF PITTSBURGH.**—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.
- RAILWAY DEVELOPMENT ASSOCIATION.**—D. C. Welty, Commissioner of Agriculture, St. L., Iron Mt. & So., 1047 Railway Exchange Bldg., St. Louis. Next meeting, November 9-10, La Salle Hotel, Chicago.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RICHMOND RAILROAD CLUB.**—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, Grand Bldg., Atlanta, Ga., Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.
- TOLEDO TRANSPORTATION CLUB.**—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRAFFIC CLUB OF CHICAGO.**—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.**—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRANSPORTATION CLUB OF DETROIT.**—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Annual convention, October 24-27, Hotel Sherman, Chicago.
- UTAH SOCIETY OF ENGINEERS.**—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN ASSOCIATION OF SHORT LINE RAILROADS.**—Clarence M. Oddie, Mills Bldg., San Francisco. Annual meeting, November 15, Brown Palace Hotel, Denver, Colo.
- WESTERN CANADA RAILWAY CLUB.**—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.
- WESTERN SOCIETY OF ENGINEERS.**—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

## Traffic News

The Southern Pacific, on Monday of this week, lifted the embargo on eastbound freight by water from Galveston; and announced in San Francisco that the embargo would end at California points on October 26.

A federal grand jury at Cleveland returned indictments against the Pennsylvania Company last week charging it with violating the law by making concessions in demurrage rates to the Cambria Steel Company.

The railroad commission of Georgia, in its extended inquiry into freight rates in that state, has this week been hearing the final testimony of the railroads in support of applications for authority to make increases in rates on commodities; and next week expects to listen to financial statements from the railroads.

The Chicago & Alton put two new westbound express trains into service on October 16. The San Antonio Limited leaves Chicago at 10:15 a. m. and arrives at St. Louis at 5:59 p. m., where close connections are made with the St. Louis, Iron Mountain & Southern and the Missouri, Kansas & Texas for points in the Southwest. The Creve Coeur Special leaves Chicago at 5 p. m. daily and arrives at Peoria at 9:20 p. m.

The annual meeting of the National Industrial Traffic League will be held in the Hotel Sherman, Chicago, on Thursday and Friday, November 9 and 10. A docket of the subjects to be considered was sent out on October 25. The most important subject to be discussed will be the position to be taken by the league with reference to the investigation of railroad conditions undertaken by the Newlands committee.

Texas, like most other states, has a freight car shortage. The War Department uses large numbers of cars in shipping food stuffs and other supplies to the one hundred thousand troops on the Mexican border. The Southern Pacific alone is said to have more than 2,000 cars constantly employed in this service. The railroads leading directly to border points are having their car equipment taxed to the utmost to meet the transportation requirements of the troops.

In a hearing before the Kansas Public Utilities Commission on October 18, J. R. Koontz, general freight agent of the Atchison, Topeka & Santa Fe, at Topeka, Kan., said that the eastern railroads had failed to keep an agreement to return promptly freight cars received from western railroads, while the western railroads had lived up to the agreement until they awoke to the situation. The Kansas railroads alone lost the use of from 15,000 to 20,000 cars because of the failure of eastern railroads to return empties. Mr. Koontz appeared before the commission as a witness at a hearing on an application for an increase in demurrage charges.

There would be no car shortage, according to J. G. Woodworth, vice-president in charge of traffic of the Northern Pacific, if the railroads were not obliged to carry, in addition to their own traffic, the enormous coast-to-coast tonnage formerly carried through the Panama canal by ships. These ships have wholly deserted this trade to seek greater profits elsewhere. Ship owners of course cannot be blamed for doing this, and they might have made some increases in rates and kept their vessels in this trade had it not been that the low transcontinental railroad rates must not be raised without approval of the federal authorities. In the year ending June 30, last, the Northern Pacific showed an increase of 20 per cent in freight business and there was no suggestion of car shortage or congestion at any time in the whole year. Business now in sight does not exceed last year's volume, but an increasing proportion is going to distant points along eastern and southern lines. Wheat, flour, lumber and other commodities are being exported through New York, Baltimore and other eastern seaports instead of going direct in ships. The Northern Pacific cannot get cars from the eastern roads to carry this freight and when it furnishes its own cars they are usually lost for years.



## Commission and Court News

### INTERSTATE COMMERCE COMMISSION

The commission has announced hearings in the general investigation of rates, rules and practices of the railroads and steamship companies in, to and from Alaska at Cordova on November 11, at Juneau November 23, and at Seattle on December 4, before Examiner Wilson.

The commission has further suspended until April 29 tariffs increasing rates on an extensive list of commodities from and to points in Western trunk line territory, including dairy products, building materials, agricultural implements. A hearing will be held at Kansas City December 2.

The Interstate Commerce Commission has further suspended from October 26 until April 26, 1917, a proposed new rule of the New York, New Haven & Hartford providing for the assessment of additional demurrage charges on cars held in transit or on storage tracks at destination.

The Interstate Commerce Commission has reopened for further argument orally and upon briefs the case of the Arlington Heights Fruit Exchange against the Southern Pacific and others, in which the commission reduced the rates to be charged on shipments of pre-cooled fruit.

The Interstate Commerce Commission has issued an order making the Canadian Pacific, the Humboldt Steamship Company, the Grand Trunk Pacific Coast Steamship Company and the Border Line Transportation Company parties to the proceedings in its investigation of transportation conditions in Alaska.

The Natchez (Miss.) Chamber of Commerce has filed a complaint with the Interstate Commerce Commission asking a revision of rates from Natchez to Texas points. The complaint alleges that it is charged the same or higher rates to Texas common points as Memphis, although the distance is much greater from Memphis and that the rates from St. Louis are only slightly different from those from Natchez, although the distance is about twice as great.

The Chamber of Commerce of the State of New York has filed an intervening petition with the Interstate Commerce Commission in the New Jersey lighterage case involving the question of the readjustment of the zone rate system of the trunk lines connecting the Port of New York with the West and South, in which Jersey City has asked for lower rates to and from the interior than New York rates. The petition states that "New York City early became a natural basic and distributing center through which passes commerce to and from all parts of the world. It was inevitable that in fixing the railroad rates Greater New York should be a basic point, around which territory contiguous would naturally form a zone or district. Following the American method of rate-making, very early in the history of New York's commerce, the Port of New York (including a large part of Long Island, Staten Island and New Jersey) became a zone or district, in which were generally established fixed schedules for freight carriage, including terminal service. To furnish the terminal service at all points within the district involves at some points a loss, but in general, because of the volume of business thus accommodated, results in a profit and in lower general rates. To adopt a new system based upon a separate charge for line-haul, plus a separate charge for terminal service, would demoralize the entire commercial situation, to the injury not only of Greater New York, but also of its neighbors in New Jersey and its business connections throughout the country."

### Lumber to New Mexico Points

*Opinion by Commissioner Meyer:*

The commission finds reasonable proposed increased rates on lumber and articles taking the same rates from points in California to points in Texas and New Mexico on the El Paso & Southwestern. Fourth section applications, however, are denied. (41 I. C. C., 331.)

### Bill of Lading Hearing

Final arguments were presented before the Interstate Commerce Commission at Washington on October 20 and 21 in the commission's investigation of matters pertaining to the provisions of bills of lading which was instituted in 1912. In June, 1908, the commission gave its tentative approval of a bill of lading which was the result of hearings and conferences between committees of the shippers and carriers in Official Classification territory and the bill was adopted substantially in that form in all three classification territories. In May, 1912, the commission instituted the present investigation for the purpose of determining whether the rules, regulations and practices in connection with the issuance, transfer and surrender of bills of lading, the conditions thereof and practices connected therewith, are unjust, unreasonable or unlawful, partly because of complaint that some carriers had failed to adopt the uniform bill. As a result of the Cummins amendment the investigation was reopened in 1915 and hearings have been held in New York, Chicago, San Francisco, New Orleans, Atlanta and Washington. As a result of the hearings an agreement has been reached between the carriers and the shippers as to most of the provisions of both the straight and order bills of lading, but certain subjects are still in dispute and were covered by the briefs filed and oral arguments presented by the carriers and a large number of commercial organizations and state commissions. The railroads were represented by committees of counsel for the three classification committees and the Uniform Bill of Lading Committee. It was contended on behalf of the railroads that they had made many concessions during their negotiations with the shippers, but that some of the provisions asked by the shippers would require the railroads to assume even greater liability than that imposed upon them by law, and that the commission could not go further in its requirements than those of the law. The very function of a bill of lading, the railroads asserted, is to modify the liability which would exist at common law, and therefore the fact that the bills of lading in use contain provisions modifying the rules of common law constitutes in no sense an argument against these provisions, but only indicates that the bills of lading are performing the usual and proper functions.

### STATE COMMISSIONS

The Pennsylvania Public Service Commission, in an order issued last week, refused the petition of the Standard Chair Company and others of Erie for an order requiring the Pennsylvania and Erie railroads to install a connecting track. The commission says: "It appears clearly that the demand which the shippers make in this complaint relates almost wholly to terminal conveniences which they would secure, by means of the interchange track, at no expense to themselves and at great and unnecessary expense to respondents."

### COURT NEWS

Upon application of the railroads operating in Nebraska the United States District Court at Omaha has granted a temporary injunction to the petitioners, restraining the State Railway Commission of Nebraska and the attorney-general of the state from bringing any action against the petitioners based upon their failure to employ the freight rates prescribed in order No. 19 of the state commission. The case will come up for hearing later to determine whether or not the injunction shall be made permanent.

The department of justice has presented to the Supreme Court of the United States a petition for a review of the court's decision in the Oregon-California land-grant case, in which the Supreme Court held that the company is the owner of the lands under the grant, with absolute title, but subject to restrictions as to the sale of the property. The government desires a review of the case for the purpose of settling a number of questions which are preventing the improvement of the property and the disposition of the timber on the land.

Ramsey county, Minn., has brought suit against the Northern Pacific, the Great Northern and the Chicago, St. Paul,

Minneapolis & Omaha to recover \$3,030,000 in alleged delinquent taxes. The contention of the county is that the securities of the Chicago, Burlington & Quincy and the Spokane, Portland & Seattle, held by the Great Northern and the Northern Pacific, are held for investment purposes, and therefore are taxable, whereas the defendants contend that the acquisition of these roads was for the purpose of controlling tonnage and traffic in the interchange of business to further develop their own properties.

Arguments were presented before the Supreme Court at Washington on October 19 in what is known as the terminal cities case, in which the United States District Court for the northern district of California had enjoined an order of the Interstate Commerce Commission, holding that Sacramento, Stockton, San Jose and Santa Clara, Calif., were not entitled to terminal rates, and allowing the carriers to charge for the transportation of westbound transcontinental freight higher rates to those cities than were charged to San Francisco, Oakland and other Pacific coast ports of call. Solicitor General Davis and Chief Counsel Folk of the Interstate Commerce Commission represented the government and J. E. Alexander of San Francisco appeared for the commercial organizations of the cities that had secured the injunction.

#### Oil Tank Car Cases

Arguments were presented in the Supreme Court of the United States on October 18 and 19 in the oil tank car cases, involving the powers of the Interstate Commerce Commission to require railroads to furnish special equipment, in which the government, the Interstate Commerce Commission and the Crew-Levick Company appealed from a judgment of the United States District Court for the western district of Pennsylvania granting an interlocutory injunction against the enforcement of an order of the Interstate Commerce Commission requiring the Pennsylvania Railroad to provide and furnish tank cars for the shipment of petroleum products.

The railroad has sold all but 499 of its tank cars and announces in its public tariffs that it does not assume any obligation to furnish tank cars. When the shipper asked for tank cars which the road was unable to furnish, it offered to supply cars in which the oil could be transported in barrels. The shipper objected because this form of transportation costs  $3\frac{1}{2}$  cents more per gallon. John G. Johnson, for the railroad, argued that a carrier owes no duty to furnish any particular character of equipment other than to supply the cars it has on hand without discrimination and to furnish safe transportation at reasonable rates, that it cannot be required to purchase additional equipment and that it does not hold itself out to furnish tank cars. It was also contended that to require a railroad to furnish tank cars is in effect to command it to furnish the package for a shipment.

Joseph W. Folk, chief counsel for the Interstate Commerce Commission, said that section 1 of the act, including in the term "transportation," cars and other vehicles and all instrumentalities and facilities of shipment, provides that it shall be the duty of every carrier "to provide and furnish such transportation upon reasonable request therefor," requiring the carrier not only to furnish cars, but to provide such cars as are reasonably necessary to supply the demand that may be expected, and that the railroad may not relieve itself from the obligation to furnish cars by refusing to provide cars. He said the carrier has not fulfilled its duty when it supplies any kind of car. The car furnished must be suitable to the reasonable needs of the shipper. When a commodity such as oil requires a particular kind of car, and this has been recognized by the general use of such car for more than a quarter of a century by the railroads, and when the use of such car is an economic necessity, as found by the commission in this case, the carrier has not fulfilled its obligation until it has furnished such car upon reasonable request. The economy of the service must be considered. The power of the commission with respect to the furnishing of cars comes into play when a reasonable request is made for such cars and the power of the commission is in exercising its administrative functions in passing upon the reasonableness of the request.

## Railway Officers

### Executive, Financial, Legal and Accounting

Henry J. Hart has been appointed general counsel of the Bangor & Aroostook, with office at Bangor, Maine, vice J. F. Gould, resigned on account of ill health.

Roy W. Smith, the announcement of whose appointment as auditor of receipts for the Nashville, Chattanooga & St. Louis with office at Nashville, Tenn., to succeed the late Charles W.

Stevenson, has just been made, was born in Nashville, Tenn., in 1881. He received his early education in the public schools of that city and entered railway service in 1898, with the Nashville, Chattanooga & St. Louis as a way bill clerk. A little later he was advanced to the abstract and interline desk, serving in this connection for several years. In 1905, he was put in charge of all station accounts and a year later was made chief clerk to the auditor of receipts. In 1907, he was appointed assistant auditor of receipts, which position he held at the time



R. W. Smith

of his recent promotion which became effective on October 15.

G. E. McDuffie has been appointed auditor of freight accounts of the Galveston, Harrisburg & San Antonio, with office at Houston, Tex., succeeding W. E. Briggs, assigned to other duties.

Lewis Warrington Baldwin, whose election as vice-president and general manager of the Central of Georgia, with headquarters at Savannah, Ga., has already been announced in these columns,

was born on February 26, 1875, at Waterbury, Md. He was graduated from Lehigh University in 1896, and began railway work in July of that year with the Illinois Central, serving consecutively as chairman, rodman and assistant engineer until June, 1898; the following three months he was assistant engineer on maintenance work, and from September, 1898, to January, 1900, he was assistant engineer on location and construction. He was then for one year supervisor of track; from February, 1901, to September, 1904, he served as roadmaster,



L. W. Baldwin

and from the latter date to April, 1906, as trainmaster. Mr. Baldwin was superintendent from April, 1906, to May, 1910, and then was appointed engineer of maintenance of way, at Chicago. In April, 1913, he became superintendent of the Kentucky division, and from January, 1915, to the following November was general superintendent, southern lines, at New Orleans, La. On November 15, 1915, he left the service of the Illinois Central to go to the Central of Georgia as general manager, which position he held at the time of his recent election as vice-president and general manager of the same road as above noted.



W. L. Stanley, general claim agent of the Seaboard Air Line at Portsmouth, Va., has been appointed assistant to the president. To Mr. Stanley will be referred all questions arising between the road and the Interstate Commerce Commission, state commissions, municipalities, or counties.

Erasmus C. Lindley, the announcement of whose election as vice-president and general counsel of the Great Northern has just been made, was born in Dublin, Ind. After a preliminary education in his native community he entered first the literary department and later on the law department of the University of Michigan. Upon the completion of his studies at that institution he took up a general law practice, being for several years assistant state's attorney under former Governor Charles S. Deneen, in Chicago, Ill. He entered railway service in 1907 as general attorney with the Chicago, Rock Island & Pacific. In April, 1910, he was appointed general solicitor for the Great Northern and later general counsel. His election as vice-president and general counsel will be effective on November 1.

### Operating

Henry Flanagan has been appointed trainmaster of the St. Paul division of the Northern Pacific, with headquarters at Minneapolis, Minn., vice George B. Ogilvie.

H. F. Burch has been appointed acting general superintendent of the Greenwich & Johnsonville, with office at Greenwich, N. Y., vice R. J. McCarty, Jr., resigned.

G. L. Hurley, trainmaster of the Macon, Dublin & Savannah at Macon, Ga., has been appointed superintendent, with headquarters at Macon, and the office of trainmaster has been abolished.

J. E. Callahan, assistant superintendent of the St. Louis Southwestern of Texas with office at Tyler, Tex., has been appointed superintendent with office at Mt. Pleasant, Tex. He succeeds H. G. Earl, who resigned recently to accept service with the Midland Valley.

R. J. McCarty, Jr., general superintendent of the Greenwich & Johnsonville at Greenwich, N. Y., has been appointed superintendent of the Susquehanna division of the Delaware & Hudson, with office at Oneonta, N. Y., vice T. J. Lynch, assigned to other duties.

C. H. Priest, assistant superintendent of the Portland Terminal Company at Portland, Maine, has been appointed superintendent, succeeding F. E. Sanborn. The office of assistant superintendent has been abolished. Through a typographical error in last week's issue his headquarters were incorrectly reported as Portland, Ore.

D. O. Ouellet, whose appointment as superintendent of the Memphis division of the St. Louis, Iron Mountain & Southern, with headquarters at Wynne, Ark., has just been announced, was born at St. Thomas, Quebec, Can., May 17, 1876. After attending the primary schools of this community, he entered Levis College, in Quebec province. On leaving this institution he obtained employment with the Grand Trunk in January, 1894. In October, 1896, he was appointed telegrapher of the Western New York & Pennsylvania, and two years later was made despatcher on this same road. In December, 1898, he took employment with the Grand Trunk as a despatcher, holding this connection two years and then entering the service of the Illinois Central in the same capacity. From November, 1901, to December, 1902, he was despatcher on the Union Pacific, and from December, 1902, to November, 1903, he held a similar position on the Chicago Great Western. In January, 1906, he became chief despatcher on the St. Louis, Iron Mountain & Southern, in which capacity he remained until May, 1910, when he was appointed trainmaster. He was promoted to assistant to the superintendent of transportation in July, 1915, which position he held at the time his present appointment became effective on October 1.

Henry Shearer, whose promotion from assistant general superintendent of the Michigan Central to be general superintendent has already been announced in these columns, was born March 1, 1868, at Galien, Mich. After attending the common and high schools of the neighborhood he entered railway service with the Michigan Central June 5, 1892, and has been continuously in the employ of this company since. From June, 1892,

to December of the same year he was a freight clerk at Matteson, Ill., and from January, 1893, to December, 1895, he was agent at Porter, Ind. From December, 1895, to February, 1898, he was agent at Chicago Heights, Ill., and from February, 1898, to November, 1899, he was agent at Michigan City, Ind. In November, 1899, he was made traveling freight agent, with office at Chicago, Ill., and held this position until May, 1900. Then for two years he was chief clerk in the general freight department, and from August, 1902, to January, 1903, he was agent at Jackson, Mich. In January, 1903, he was made chief clerk to the general manager, with office at Detroit, Mich., and in October, 1909, promoted to division superintendent at St. Thomas, Ont., where he served until December, 1912. About this time he was appointed assistant to the general manager, doing special work in connection with congestion at Detroit, Mich., and reorganizing the company's terminals at that place. He served in this capacity until February, 1913, when he was promoted to be assistant general superintendent, which office he retained until his recent appointment as general superintendent of the same road.

George D. Brooke, who has been appointed superintendent of the Cumberland division of the Baltimore & Ohio, with headquarters at Cumberland, Md., was born on September 15, 1878,



G. D. Brooke

at Sutherlin, Va., and graduated from the Virginia Military Institute in 1900. He began railway work on July 17, 1902, as a rodman on the Baltimore & Ohio. From August to December, 1902, he served as levelman, and then to May, 1904, as transitman. He was appointed assistant engineer in charge of a field party in May, 1904, remaining in that position until March, 1905, when he was appointed assistant engineer at Cumberland, Md., in charge of location surveys. From July, 1908, to July of the following year he was as-

sistant division engineer at Pittsburgh, Pa., and then to March, 1911, was division engineer at Baltimore, Md. From March, 1911, to February of the following year he was assistant engineer in the operating department, and in February, 1912, was appointed assistant superintendent at Keyser, W. Va. He was appointed superintendent of the Shenandoah division at Winchester, Va., in September, 1912, and subsequently served as superintendent of the Ohio division of the Baltimore & Ohio Southwestern, with headquarters at Chillicothe, Ohio, until his recent appointment as superintendent of the Cumberland division of the Baltimore & Ohio, as above noted.

### Traffic

G. W. Bumpas has been appointed commercial freight agent at the Cincinnati, Hamilton & Dayton with office at Chicago, Ill., succeeding C. H. Gomm, promoted.

T. J. Walters has been appointed manager of the Central States Despatch Lines, with headquarters at Cincinnati, Ohio, succeeding Stuart A. Allen, promoted.

C. H. Gomm has been appointed division freight agent of the Baltimore & Ohio Southwestern, with office at Springfield, Ill., succeeding John D. Marnay, promoted.

E. E. Cleary, chief clerk to the claim agent of the Nashville, Chattanooga & St. Louis at Nashville, Tenn., has been appointed claim agent, succeeding S. D. Cowden, resigned.

E. L. Hunt, traveling freight agent of the Queen & Crescent, with office at Louisville, Ky., has been appointed commercial agent of the same road, with same headquarters.

R. H. Carmichael, division freight agent of the Southern Pacific, Texas Lines, with office at Houston, Tex., has been ap-

pointed assistant general freight agent with the same headquarters.

R. F. Britton, commercial agent of the St. Louis Southwestern at Texarkana, Tex., has been transferred to Memphis, Tenn., succeeding A. K. James, appointed general agent, freight department, at Chicago, Ill.

W. E. Briggs, freight auditor of the Southern Pacific, Texas Lines, with office at Houston, Tex., has been appointed assistant general freight agent with the same headquarters, succeeding Gentry Waldo, promoted.

Philip Meininger, chief clerk to the president of the Baltimore & Ohio Chicago Terminal, has been appointed general freight and passenger agent with office at Chicago, Ill., succeeding P. F. Finnigan, recently promoted.

Thomas G. Beard, assistant general freight agent of the Southern Pacific, Texas Lines, with office at Houston, Tex., has been appointed general freight agent in charge of solicitation, with the same headquarters.

Gentry Waldo, assistant general freight agent of the Southern Pacific, Texas Lines, with office at Houston, Tex., has been appointed general freight agent with the same headquarters, succeeding the late James R. Christian.

C. O. Jackson, assistant general passenger agent of the St. Louis, San Francisco & Texas and the Ft. Worth & Rio Grande, with office at Ft. Worth, Tex., has been appointed general passenger agent, with the same headquarters.

Oscar A. Constans, who has been appointed freight traffic manager of the Northwest district of the Baltimore & Ohio System, with headquarters at Chicago, Ill., was born on November 23, 1862. He was educated in the grammar and high schools at Columbus, Ohio, and began railroad work in 1883 as clerk on the Baltimore & Ohio at Columbus. From 1884 to 1887 he served as secretary to the assistant general freight agent at Columbus, and then to February, 1891, as secretary to the general freight agent at Pittsburgh. He subsequently was appointed chief clerk in the general freight office at Pittsburgh, remaining in that position until March, 1895, when he became division freight agent at Pittsburgh. From May, 1897, to June, 1902, he was division freight agent at Columbus, Ohio, and then to February, 1907, was division freight agent at Cleveland. In February, 1907, he was appointed general freight agent at Pittsburgh; in April, 1910, he was appointed western freight traffic manager at Chicago of the same road, and now becomes freight traffic manager of the Northwest district of the Baltimore & Ohio System, as above noted. Mr. Constans' entire railway service has been with the Baltimore & Ohio.

F. A. Farnsworth, general agent, freight department of the Delaware & Hudson at New York, has been appointed general eastern freight agent, with headquarters at Albany, and T. J. Lynch, superintendent at Oneonta, has been appointed general agent, freight department, at New York City, vice Mr. Farnsworth.

C. E. Bell, assistant general freight agent of the Southern Railway at Atlanta, Ga., has been transferred to Washington, D. C., in charge of work pertaining to cases before the Interstate Commerce Commission, and E. R. Oliver, assistant general freight agent at Louisville, Ky., has been transferred to Atlanta, Ga., vice Mr. Bell.

S. D. Cowden, claim agent of the Nashville, Chattanooga & St. Louis, with office at Nashville, Tenn., has resigned to become president and treasurer of the Southern Graphite Company of

Ashland, Ala. He entered the service of the N. C. & St. L. in 1898 as chief clerk to the claim agent, and became claim agent in 1901, upon the resignation of H. W. Wolfe.

David H. Street, commercial freight agent of the Baltimore & Ohio at Akron, Ohio, has been promoted to division freight agent, with office at Cumberland, Md., succeeding James R. Bell, granted leave of absence until January 1, 1917, on account of ill health. Mr. Bell will be transferred to Baltimore when he returns to service and assigned to duty on the staff of the general freight agent of the eastern lines.

Daniel S. Roberts, general agent of the Kansas City Southern at Pittsburgh, Pa., has been appointed assistant general freight agent, with headquarters at Kansas City, Mo. He will be succeeded at Pittsburgh, Pa., as general agent by E. L. Whitney, now general agent at Dallas, Tex. B. W. Haughton, traveling freight agent, with office at Dallas, Tex., succeeds E. L. Whitney as general agent, with the same headquarters.

Incident to the retirement of C. S. Wight, general freight traffic manager of the Baltimore & Ohio, from active duty at his personal request, after 50 years of active service, A. W. Thompson, vice-president of traffic and commercial development, announces that effective at once the lines of the system are divided into three districts with respect to the freight department organization, each under the jurisdiction of a freight traffic manager. Mr. Wight becomes general freight representative, reporting to the vice-president, and having charge of the rate and tariff bureau and performing such other duties as may be assigned to him. Archibald Fries, general freight agent at Pittsburgh, has been promoted to freight traffic manager of the eastern lines, with headquarters at Baltimore, Md. C. L. Thomas, freight traffic manager of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, becomes freight traffic manager of the Southwest district, with headquarters at Cincinnati, Ohio. O. A. Constans, western freight traffic manager, becomes freight traffic manager of the Northwest district, with headquarters at Chicago. H. M. Matthews, general coal and coke agent, becomes coal traffic manager, with jurisdiction over all coal traffic moving over the system and reporting to the vice-president of traffic. H. R. Lewis, general freight agent at Baltimore, becomes general freight agent at Pittsburgh, succeeding A. Fries, with jurisdiction over the Pittsburgh, New Castle, Cleveland, Connellsville, Wheeling and Ohio River divisions. W. R. Askew, division freight agent, is promoted to general freight agent at Baltimore, with jurisdiction over the territory east of the Ohio river except the Pittsburgh, Connellsville, Wheeling and Ohio River divisions and excluding the territory between Moundsville and Wheeling. S. T. McLaughlin, general freight agent at Cincinnati, is promoted to assistant freight traffic manager of the Southwest district, at the same headquarters. O. S. Lewis, assistant general freight agent, at Cincinnati, is promoted to general freight agent of the Southwest district, with headquarters as at present. P. F. Finnegan, general freight agent at Chicago, continues in this capacity with jurisdiction over the Chicago and Newark divisions of the Northwest district. The title of C. H. Harkins is changed from assistant to western freight traffic manager to assistant to freight traffic manager of the Northwest district, with headquarters at Chicago.

#### Engineering and Rolling Stock

C. C. Hill, division engineer of the Michigan Central, with office at Niles, Mich., has been appointed to the valuation department of the road.

C. E. Bess, assistant general foreman of the Southern Pacific at Rosedale, Cal., has been appointed assistant master mechanic with headquarters at Sparks, Nev., succeeding Paul Jones, promoted.

Paul Jones, assistant master mechanic of the Southern Pacific with office at Sparks, Nev., has been appointed a member of the efficiency committee of that company with headquarters at San Francisco, Cal.

William A. Duff, engineer of bridges, of the Canadian Government Railways at Moncton, N. B., has been appointed assistant chief engineer. He will continue to perform the duties of engineer of bridges, will have charge of the Halifax Ocean Terminals and will perform such other work as may be assigned by the chief engineer.



O. A. Constans



William R. Elmore, recently appointed master mechanic of the Nevada Northern, with headquarters at East Ely, Nev., was born at Greers, S. C., on October 14, 1867. He first entered railway service with the Nashville, Chattanooga & St. Louis in March, 1895, as an air brake machinist in the locomotive and car department. He remained with this company until 1903, following which he had mechanical experience with the Southern at Atlanta, Ga., and Birmingham, Ala., with the Louisville & Nashville at Birmingham, with a steel works at Pueblo, Colo., and with the Denver & Rio Grande at Alamosa, Colo., and at Salt Lake City. He entered the service of the Nevada Northern on March 1, 1915, as general foreman. He was promoted to acting master mechanic on August 1, 1916, and was made master mechanic on October 1.

George Allen Kyle, consulting engineer, Portland, Ore., the announcement of whose appointment as chief engineer of the new railway corporation which is to construct 1,500 miles of new road in China, was born in the village of Tobasco, Clermont county, Ohio, on September 21, 1857. He took a short course in civil engineering at Holbrook's College, Lebanon, Ohio, after which he entered railway service in 1876. In 1883 he was division engineer in charge of location and construction of 30 miles of road for the Cincinnati & Eastern near Portsmouth, Ohio. During 1884 to 1886, inclusive, he was with the Chicago Great Western, in charge of the construction of 80 miles of railway in Illinois and Iowa. In 1894 he was appointed engineer maintenance of way in charge of the revision of the main line of the Baltimore & Ohio Southwestern. From 1895 to 1898 he was in mining work in South Africa. In 1899 he returned to the United States and was appointed division engineer of the Northern Pacific, working on location and construction until 1901, during part of which time he was in charge of maintenance of way. From 1902 to 1904 he was division engineer of the Grand Trunk Pacific, with headquarters at Winnipeg, Can. He resigned in 1904 to accept service with the Northern Pacific on special work. During 1905 and 1906 he was engineer of surveys and consulting engineer on construction with the Alaska Central. From 1907 to 1909 he was assistant chief engineer of the Chicago, Milwaukee & St. Paul, having jurisdiction over about 800 miles of main line and about 200 miles of branch lines on the extension to the Pacific coast. During 1909 and 1910 he was chief engineer of the Oregon Trunk, being later made vice-president and general manager. From 1911 to the time his present appointment became effective, on October 15, 1916, he was a consulting engineer, specializing in reports on railroad properties and in general engineering consultation.



G. A. Kyle

## OBITUARY

W. A. Witt, formerly superintendent of the Seaboard Air Line at Jacksonville, Fla., previous to November, 1912, and subsequently general superintendent of the Norfolk Southern at Norfolk, Va., died on October 20 at Richmond, Va.

John A. Fox, superintendent of the Clifton Forge division of the Chesapeake & Ohio, died suddenly on October 15, at Clifton Forge. Mr. Fox was born in 1862, at Louisville, Ky. He entered the service of the Chesapeake & Ohio about 35 years ago as an engineer and from that position worked his way up to division superintendent of the Cincinnati and Ashland divisions, at Ashland, Ky., where he served for a number of years. Since May, 1916, he was superintendent of the Clifton Forge division of the same road with headquarters at Clifton Forge.

## Equipment and Supplies

### LOCOMOTIVES

THE NEVADA NORTHERN is about to buy one Consolidation locomotive.

THE MIDLAND CONTINENTAL is inquiring for one ten-wheel locomotive.

RUHAAK & Co. (Dutch East Indies) are inquiring for one Forney type locomotive.

THE ANDREWS STEEL COMPANY, Newport, Ky., is in the market for 2 four-wheel switching locomotives.

THE ESCANABA & LAKE SUPERIOR has ordered one ten-wheel locomotive from the Baldwin Locomotive Works.

THE BETHLEHEM STEEL COMPANY, Lebanon, Pa., has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE MARK MANUFACTURING COMPANY, So. Chicago, Ill., has ordered 2 four-wheel locomotives from the Baldwin Locomotive Works in addition to 2 locomotives reported in last week's issue.

THE AMERICAN ROLLING MILL COMPANY, Middletown, Ohio, reported in last week's issue as being in the market for locomotives, has ordered 2 six-wheel switching locomotives from the Baldwin Locomotive Works.

THE WESTERN MARYLAND, reported in the *Railway Age Gazette* of October 6 as being in the market for 20 Mallet type locomotives, has ordered 10 Mallet type locomotives from the Lima Locomotive Works, Inc.

THE SOCIETE ANONYME DES PLANTATIONS DE GOUNOUNG (Sumatra) has ordered one six-wheel tank locomotive from the American Locomotive Company. This locomotive will have 7 by 12 in. cylinders, 24½ in. driving wheels and a total weight in working order of 23,000 lb.

THE BRITISH WAR OFFICE was reported in last week's issue as having ordered 100 locomotives from the American Locomotive Company. These locomotives are six-coupled tank locomotives of the 2-6-2 type. They will have 9 by 14 in. cylinders, 27 in. driving wheels and a total weight in working order of 36,000 lb.

THE ORLEANS RAILWAY (France) was reported in last week's issue as having ordered 50 Mikado locomotives from the American Locomotive Company. These locomotives will have 597 by 711 mm. cylinders, driving wheels measuring 1,650 mm., a total weight in working order of 200,000 lb. and will be equipped with superheaters.

THE FINLAND STATE RAILWAYS, reported in last week's issue as having ordered 20 locomotives from the American Locomotive Company, ordered 20 superheater Consolidation locomotives from that company. These locomotives will have 20 by 28 in. cylinders, 55 in. driving wheels and a total weight in working order of 138,000 lb.

THE BUFFALO, ROCHESTER & PITTSBURGH has ordered 10 Mikado and 5 Mallet locomotives from the American Locomotive Company. The Mikado locomotives will have 26½ by 30 in. cylinders, 63 in. driving wheels and a total weight in working order of 278,000 lb. The Mallet (2-6-6-2) type locomotives will have 23½ and 37 by 32 in. cylinders, 57 in. driving wheels and a total weight in working order of 429,000 lb. All 15 locomotives will be equipped with superheaters.

### FREIGHT CARS

SWIFT & Co. is in the market for 400 underframes.

THE MISSOURI, KANSAS & TEXAS is inquiring for 1,000 stock cars.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 1,500 box cars.

THE UNION PACIFIC is inquiring for 1,500 box and 1,000 automobile cars.

THE ILLINOIS CENTRAL has revived inquiries for 2,000 composite gondola cars.

THE PHILADELPHIA & READING is about to place orders for 2,000 50-ton hopper cars.

THE PENNSYLVANIA RAILROAD is reported in the market for 4,000 to 6,000 steel underframes.

THE GREAT NORTHERN is contemplating the purchase of 1,000 refrigerator cars and 2,000 box cars.

WILSON & Co., Chicago, has ordered 250 refrigerator cars from the Haskell & Barker Car Company.

THE PENNSYLVANIA LINES WEST are reported to have ordered 4,000 steel underframes from the Cambria Steel Company.

THE LOS ANGELES & SALT LAKE has asked for alternate bids on 100 steel and 100 single sheathed steel underframe automobile cars.

THE BALTIMORE & OHIO, reported in last week's issue as inquiring for 1,000 freight cars, is in the market for 1,000 50-ton side dump hopper cars.

THE PERE MARQUETTE is inquiring for specialties for 500 cars to be repaired in its own shops. It is also in the market for 1,000 38-ft. 40-ton box cars.

THE ATLANTIC COAST LINE is in the market for 1,000 30-ton cars and 500 40-ton cars, and not for 1,000 cars as incorrectly reported in last week's issue.

THE CHICAGO & NORTH WESTERN has ordered 1,000 composite gondola cars from the Pullman Company and 1,500 30-ton box cars from the American Car & Foundry Company.

THE LOUISVILLE & NASHVILLE, reported in last week's issue as being in the market for 750 box car underframes and 750 gondola car underframes, has ordered these underframes from the Pressed Steel Car Company.

THE UNION TANK LINE, reported in last week's issue as having arranged for the construction of 2,250 tank cars, has ordered 500 from the Pressed Steel Car Company, 500 from the Standard Steel Car Company, 1,000 from the American Car & Foundry Company, and will build 250 cars in its own shops.

### PASSENGER CARS

THE WABASH is in the market for 6 postal cars.

THE CENTRAL OF GEORGIA has ordered 6 sleeping cars from the Pullman Company.

THE NORFOLK & WESTERN, reported in the *Railway Age Gazette* of October 6 as inquiring for 50 passenger cars, is in the market for 22 coaches, 5 passenger and baggage cars, 13 baggage and express cars and 10 baggage and mail cars.

### IRON AND STEEL

THE ANN ARBOR is reported to have ordered 1,500 tons of rails from the Illinois Steel Company.

THE PENNSYLVANIA RAILROAD has ordered 1,000 tons of bridge steel from the McClintic-Marshall Company.

THE GREAT NORTHERN has ordered 305 tons of steel from the Minneapolis Steel & Machinery Company for an extension to its mail and express building at Minneapolis.

### MISCELLANEOUS

ATLANTIC SOUTHERN.—J. B. Marsh, special master, 204 Masonic temple, Des Moines, Ia., will receive bids for a limited time from the date of his notice for the whole or any portion of the property of the Atlantic Southern, extending from Atlantic to Villisca, Iowa, which includes a 100 ft. right-of-way, stockyards, station buildings and grounds; about 3,500 tons of 60-lb. steel rails; 39 sets switches and frogs; about 420 tons of fish plates, bolts, spikes and general railroad iron; about 62 miles of fencing; about 100,000 ties, and equipment consisting of 3 engines, 2 passenger coaches, 1 caboose, 6 box and coal cars, 2 section motor cars, 2 hand cars and 5 push cars; a telephone system and blacksmith and track tools.

## Supply Trade News

D. P. Lameroux has been appointed general manager of the Pratt & Letchworth Company, Ltd., Brantford, Ont.

Cleveland A. James, recently connected with the Lehigh Valley, in charge of Buffalo terminal construction, has located in the Fidelity Trust Bldg., Buffalo, New York, as consulting engineer.

The Jones & Laughlin Steel Company, Pittsburgh, Pa., intends soon to establish a large warehouse in St. Paul, Minn., to handle its greatly increasing northwest business. This company has extensive mine holdings in Minnesota and operates its own steamship line on the great lakes.

William F. Leake, secretary and treasurer of T. S. Leake & Co., general contractors, and also secretary and treasurer of the Railroad Water & Coal Handling Company, both of Chicago, Ill., died at his home in that city on October 4, of pneumonia, after a brief illness. He was born in June, 1858, at Ottawa, Ill., where he received his early education. In his boyhood he took up the carpenter's trade, obtaining his first employment with the Sanders' Brothers Manufacturing Company of that city. After a few years he entered the service of the Illinois Central, later being made general foreman of carpenters for the entire system. After several years with this company he became general superintendent of George B. Swift & Co., general contractors. In 1907 he and his brother, T. S. Leake, organized the contracting firm of T. S. Leake & Co., of which he became secretary and treasurer. In 1914 he also became interested in the Railroad Water & Coal Handling Company, Chicago, Ill.



W. F. Leake

The Pressed Steel Car Company has declared a quarterly dividend of \$1.50 a share on its common stock. It paid 75 cents quarterly on its common stock in 1914, but no dividends on this stock in 1915. Dividend payments on the common stock were resumed July 26, 1916, with a declaration of a quarterly dividend of \$1.00 a share.

F. H. Lovell & Co., Arlington, N. J., manufacturers of marine and railroad lighting appliances and electrical specialties, have been given a contract by the United States Navy Department for \$630,000 worth of ammunition material. This makes a total of \$1,161,000 worth of this material on which the company has or has lately had continuous contracts. The new contract will necessitate an addition to the company's plant.

Lima Locomotive Works, Inc., held a directors meeting in New York on October 20. This company is successor to the Lima Locomotive Corporation and has taken over all property and assets of the latter corporation. All the officers of the old corporation were re-elected as follows:—J. S. Coffin, chairman of the board; A. W. Wheatley, president; J. E. Dixon, vice president; W. D. Cloos, secretary and treasurer. The board of directors is as follows: J. S. Coffin, chairman, S. G. Allen, A. W. Wheatley, Franklin Q. Brown, Le Grand Parish, H. F. Ball and John E. Muhlfeld.

The Locomotive Stoker Company, which was formerly at Schenectady, N. Y., has now for some months been occupying



the former manufacturing plant of the Westinghouse Air Brake Company, in Allegheny, Pa. The old plant has been adapted to the purposes of the stoker business, and has been modernized to some extent to suit the circumstances, and equipped with modern machinery. This plant was built and occupied by the Westinghouse Air Brake Company about 1880. It was used by the Air Brake Company until the great development of the business led to the construction of the present plant at Wilmerding, about ten years later. Since that time the old plant has been used for electric work in various departments.

William A. Austin, recently connected with the Lima Locomotive Corporation, Lima, Ohio, as chief engineer, has formed a company called the Austin Engineering Associates which have



W. A. Austin

offices in the McCormick building, Chicago, Ill. This firm will conduct a general consulting engineering business, but will specialize chiefly on railway motive power and equipment. Mr. Austin was born in London, England, in 1874, and received his early education in a private school there. On coming to America, he continued his education in the public schools of Philadelphia, Pa., and then took up more advanced studies at the Technical High School in that city. His first service in railway work was with the Baldwin Locomotive Works, with which company he became connected in 1892, as draftsman. He was later made designer, assistant chief draftsman and assistant mechanical engineer. This last named position carried the entire duties of estimating engineer in charge of preliminary analyses, estimates, plans and general design in conjunction with the sales department. In 1912 he became associated with the Lima Locomotive Corporation as chief engineer in charge of all engineering, design and estimating, and he also served as general field representative for the sales department in technical matters. He left that company to form the Austin Engineering Associates, as above noted. During the period Mr. Austin was with the Baldwin Locomotive Works he participated directly in the development of the Mallet type of locomotive in this country, in the early application of the Walschaert valve gear to American locomotives and he was co-developer of the much used Ragonnet reversing gear. He also assisted the engineers of the Southern Pacific and Union Pacific systems in perfecting common locomotive standards for these lines. He is inventor of the "Austin trailer-truck," successfully applied to many Lima locomotives for trunk line service, there being about 40 of these trucks in service on the Great Northern alone. He has invented other devices used in locomotive construction, including a screw reverse gear adopted by the Southern Pacific, an outside steam pipe cover which is used on many superheater engines, a hose strainer coupling connection between engine and tender, as well as improvements in rack-rail locomotives and gear-driven engines.

#### John Scott Medal Awarded to Inventor of Cement Gun

The city of Philadelphia, acting on the recommendation of the Franklin Institute, recently awarded John Scott legacy medals and premiums to John V. N. Dorr, president of the Dorr Cyanide Machinery Company, of New York, and to Carl E. Akeley, sculptor, naturalist and African explorer, who is connected with the American Museum of Natural History, New York.

The award was made to Mr. Akeley for the invention of the Cement-Gun, a device for applying cement mortar by the use of compressed air. This machine is being manufactured by the Cement-Gun Company, of New York, and has proved to be of great value for water-proofing dams and reservoirs, and coating structural work, houses, etc.

## Railway Construction

**ATLANTIC COAST LINE.**—This company is building a sidetrack from a point on the main line near James Crossing, S. C., to the plant of Harby & Co., Harrell Hill, about two miles.

**BELLE FOURCHE & NORTHWESTERN RAILROAD.**—Organized in South Dakota as successor of the Belle Fourche & Northwestern Railway to build from Belle Fourche, S. Dak., to Miles City, Mont., 204 miles. The capital stock has been increased from \$500,000 to \$1,000,000. The incorporators of the new company are: H. F. Albers, J. H. Mulcahy, Miles City, Mont.; R. F. Furnish, general manager, Miles City; S. M. Culberson, Minneapolis, Minn.; L. A. DeBelloy, Cap Crook, S. Dak.; B. S. Payne and J. Sutherland, Pierre, S. Dak. (September 22, p. 530.)

**CANADIAN NORTHERN.**—This company is planning an extension of its line from Eston, Alta., Can., to a point about 35 miles west. No contracts have been awarded and it is not known yet just when work will be started. M. N. MacLeod, general manager, Winnipeg, Can.

**CHICAGO & NORTH WESTERN.**—This company will soon commence the elevation of its tracks through the township of Proviso and the villages of Maywood, Bellwood and Melrose Park, all in Cook county, Ill. The approximate cost of this undertaking will be \$2,000,000.

**DEEP CREEK RAILROAD.**—Contracts have been awarded to the Utah Construction Company of Ogden, Utah, for the construction of a new road beginning at Wendover, Utah, on the Western Pacific, and extending to Gold Hill, Utah, in the Deep Creek region, a distance of about 35 miles. As there are no special engineering difficulties to overcome it is expected that the line will be ready for operation in about ninety days. While much of the territory to be traversed is agricultural the primary object of the undertaking is to develop the mines. The approximate cost of the line will be \$500,000. (October 20, p. 719.)

**KNOXVILLE INTERURBAN.**—Incorporated in Tennessee with \$10,000, it is said, to build a line from Vestal, Tenn., south of Knoxville to Maryville, about 13 miles. M. T. DeVault and N. B. Morrell are incorporators.

**LEHIGH VALLEY.**—This company has just completed and placed in service a 1.5-mile addition to its Raritan branch. The new line is located in Piscataway township, Middlesex county, New Jersey, and reaches the plant of the Standard Hollow Tile Company and a new refining plant being constructed by Charles Delarue. The Raritan branch is an offshoot of the Lehigh Valley's line between South Plainfield and Perth Amboy.

**PENNSYLVANIA RAILROAD.**—This company is building with company forces about one mile of line from the east end of Harrisburg, Pa., to the center of Steelton borough. The work includes building one steel bridge, also a freight station to be 20 ft. wide and 100 ft. long.

**RED LAKE NORTHERN.**—This is the name of a new road to be constructed from Alida, Minn., in a northerly direction past the west end of Red Lake to the Canadian boundary, at, or near, the Lake of the Woods, and from Alida, Minn., south and past the Itasca State Park to the Twin Cities. This will involve 41 miles of truckage. Another hundred miles is expected to be completed before the close of 1917. Actual construction on any part of this undertaking will not be attempted for several weeks, at which time contracts will be awarded and the work pushed along rapidly. Jens J. Opsahl, Bemidji, Minn.

**WESTERN & ATLANTIC.**—Bids are wanted until December 5, 1916, by the Western & Atlantic Railroad Commission for lease of the Western & Atlantic Railroad, owned by the state of Georgia and the commission will at the same time receive any proposal submitted looking to the extension of this railroad from Atlanta to any or all of the Georgia ports, either by the construction of a new standard gage line or by the acquisition in whole or in part of existing railways. The Western & Atlantic runs from Atlanta, Ga., to Chattanooga, Tenn., 136.82 miles, only 6.33 miles of which is double track. The road is now operated by

the Nashville, Chattanooga & St. Louis, under a lease which expires in December, 1919. (January 21, p. 148.)

**WESTERN MARYLAND.**—The report of this company for the year ended June 30, 1916, shows that the Somerset Coal Railway from Coal Junction, Pa., was completed October, 1915, to mine 123 of the Consolidated Coal Company, 2.2 miles, and is being extended to mine 125, an additional 2.4 miles. Work is under way on the Fairmont Bingamon Railway, and it is expected that grading on the entire eight miles will be completed by January 1, 1917. This branch will serve three openings at Wyatt, W. Va., belonging to the Consolidated Coal Company. Work on the second track from Edgemont to Pen Mar, 3.52 miles, was completed, and the construction of the second track from the Hagers-town passenger station to Security, 2.4 miles, and from Big Pool to Clearspring, 5.62 miles, is now under way and should be completed by January 1, 1917.

## RAILWAY STRUCTURES

**BALTIMORE, MD.**—Plans have been completed by the Baltimore & Ohio for building a new passenger station at Gay street, Baltimore. The station will be of brick construction, 30 ft. by 40 ft., with concrete foundations and tile roof. Work will be started at once.

**BESSEMER, ALA.**—Work on the proposed new freight house for the Alabama Great Southern at Bessemer will be started at once, it is said, and will be pushed to completion. The station is to be built between Carolina and Alabama avenues, two blocks west of the new passenger station. The improvements will cost about \$35,000.

**GREENSBURG, PA.**—The Pennsylvania Railroad has given a contract to H. L. Kreusler, Pittsburgh, Pa., for building a 40-foot extension to the single-story combined freight warehouse and office building at Greensburg. The extension will have concrete foundation and will be of brick construction with slate roof. The cost of the improvements will be about \$50,000.

**NEWTON, N. C.**—Residents of Newton have asked the Southern Railway to build a new station at that place. No detailed plans have been made for this improvement.

**NEW YORK.**—The New York Public Service Commission, First district, has awarded to Louis Wechsler, New York City, a contract at \$382,521 for the construction of station finish for five stations on the new Seventh avenue line and for the diagonal station at Forty-second street between Park and Lexington avenues near which the new Lexington avenue line connects with the first subway.

Bids have been opened by the commission for the construction of concrete track floors and platforms over the mezzanines of eleven stations on the Culver Rapid Transit Railroad now under construction in the borough of Brooklyn.

**PHILADELPHIA, PA.**—Bids were received by the Pennsylvania Railroad on October 26 for the construction of concrete culverts under its tracks west of Thirty-third street, Philadelphia.

**POMONA, N. C.**—Improvements at the Pomona yards east of Greensboro have been authorized by the Southern Railway. The present yard at Pomona consists of 7 tracks having a total capacity of 359 cars. Six of the yard tracks will be extended at both ends, a new southbound passing track 3,500 feet long, also 13 new yard tracks and 3 repair tracks will be constructed. The yard proper will have a capacity of 1,084 cars and the repair tracks 104 cars, or a total of 1,188 cars, an increase in capacity of 829 cars. A new engine terminal will be located at Pomona Junction between the main line and the line to Winston-Salem. It will consist of a modern fireproof 18-stall roundhouse, 100-foot turntable, mechanical coaling station with a capacity of 1,000 tons in its bins and provision for additional ground storage, sand house, 2 cinder conveyors, boiler room, machine shop, wash and locker room and oil room. A pumping plant to provide an adequate water supply will also be constructed consisting of duplicate oil engines and power pumps in a fireproof pump house, new pipe lines and electrical tank signals, new 96,000-gallon water tank, booster pump, pumphouse and standpipes at Pomona Junction. Bids for the construction of the roundhouse and heating for same are now asked for.

## Railway Financial News

**CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.**—Samuel A. Lynde, vice-president, with office at St. Paul, Minn., has been elected a director of the road, to succeed William A. Gardner, deceased.

**FT. SMITH & WESTERN.**—A press dispatch from Ft. Smith, Ark., says that the United States District Court has ordered the sale of the Ft. Smith & Western under foreclosure. No date has been set for the sale.

**NEW YORK CENTRAL.**—The board of directors has voted to authorize the issue of \$25,000,000 new stock to be offered to stockholders at par. The proceeds of the sale of this stock are to be devoted to the general corporate purposes of the company. It is understood that subscriptions will not be opened until after the first of the year. In December there is a meeting of the directors, at which a dividend declaration is due. The New York Central is now paying dividends at the rate of 5 per cent.

**NEW YORK, NEW HAVEN & HARTFORD.**—This company and the Boston Railroad Holding Company have been given another year within which to dispose of the controlling interest of the Boston & Maine stock. Under the previous decree of the court the Boston & Maine securities were to have been sold under the supervision of five trustees by January 1, 1917. The time has now been extended to January 1, 1918. The trustees had asked for an extension of two years' time.

**WELLSVILLE & BUFFALO.**—President C. A. Finnegan is quoted as saying that this company will suspend operations on November 1 "on account of the continued large cash financial loss in the passenger and freight service ever since the company was organized and began operations." The Wellsville & Buffalo runs from Buffalo to Wellsville, 90 miles, and was formerly part of the Buffalo & Susquehanna system, being part of the Buffalo & Susquehanna Railway. The Buffalo & Susquehanna Railroad and part of the Railway were reorganized separately from this road, running from Buffalo to Wellsville.

**RUSSIA'S NEW SIBERIAN PORT.**—The Russian government has opened a new Pacific terminus for the Trans-Siberian Railway. This is the port of Nikolaievsk, at the mouth of the Amur river, near the head of the Gulf of Tartary, about 850 miles north of Vladivostok. Goods received here will be transported inland up the Amur river to Stretyinsk, which is reached by a railroad that connects with the Trans-Siberian line. The new port will be able to handle 72,000,000 pounds of freight, and it will thus help considerably to relieve the pressure of Vladivostok. The Trans-Siberian Railway is one of the great engineering achievements of the world, and a monument to the vision, perseverance and skill of the Russian engineer. The double-tracking of this 6,677 mile-long railway was begun some years ago. When the war started, thousands of additional men were set to work to hasten this vast undertaking, and the second track has just been finished, in time to facilitate the shipments of the enormous stores of artillery, projectiles, explosives, machinery and goods of all kinds from the United States and Japan and England that have piled up on the crowded wharves and shores at Vladivostok during the past winter. This port has been overwhelmed by the demands upon its comparatively limited resources. Its contracted harbor has been unable to accommodate the sudden access of shipping, and insufficient docks and the lack of unloading machinery and of warehouses have caused great delays; 31,000,000 tons of freight arrived at Vladivostok in the first four months of 1915, compared with 2,195,000 tons in the corresponding period of 1914. Thousands of workmen have been struggling night and day to enlarge the docks and port facilities, and the wharves are being trebled in length to accommodate at least 40 great freighters at one time. Some of this congestion will be relieved by the routing of shipments to Nikolaievsk, which has become chief port of supply for the mining district of Chita and other prosperous Siberian communities previously served via Vladivostok.—*Far Eastern Review.*



## ANNUAL REPORT

## NEW YORK, NEW HAVEN AND HARTFORD

## INCOME ACCOUNT FOR THE YEAR ENDING JUNE 30, 1916.

	1916. 2,004.62	Comparison with 1915. Increase. 1.45	Decrease.
Average Miles Operated.....			
<b>RAILWAY OPERATING REVENUES:</b>			
Freight .....	\$37,448,020.64	\$6,268,701.93	
Passenger .....	29,620,567.21	2,609,768.38	
Excess Baggage .....	154,326.33	17,980.83	
Mail .....	714,772.07		\$2,383.09
Express .....	3,578,326.45	868,687.32	
Other Transportation .....	1,278,586.61	320,916.35	
Incidental .....	2,840,076.21	815,045.62	
Joint Facility .....	676,977.39	33,671.86	
<b>TOTAL RAILWAY OPERATING REVENUES .....</b>	<b>76,311,652.91</b>	<b>10,932,389.20</b>	
Per Mile (Average).....	\$38,067.89	\$5,429.99	
<b>RAILWAY OPERATING EXPENSES:</b>			
Maintenance of Way and Structures .....	8,779,166.06	1,049,925.48	
Maintenance of Equipment.....	10,859,656.11	1,079,326.42	
Traffic .....	470,278.42		3,089.86
Transportation—Rail Line .....	28,423,556.85	4,464,854.39	
Miscellaneous Operations .....	845,779.80	253,726.11	
General .....	1,756,431.21	145,187.75	
Transportation for Investment—Deduct .....	56,510.64		38,196.24
<b>TOTAL RAILWAY OPERATING EXPENSES .....</b>	<b>51,078,357.81</b>	<b>6,951,734.05</b>	
Per Mile (Average).....	\$25,480.32	\$3,451.92	
<b>NET REVENUE FROM RAILWAY OPERATIONS .....</b>	<b>25,233,295.10</b>	<b>3,980,655.15</b>	
Per Mile (Average).....	\$12,587.57	\$1,978.07	
<b>RAILWAY TAX ACCRUALS .....</b>	<b>2,856,254.61</b>	<b>112,333.14</b>	
Per Mile (Average).....	\$1,424.84	\$55.05	
<b>UNCOLLECTIBLE RAILWAY REVENUES .....</b>	<b>5,760.64</b>	<b>2,069.72</b>	
<b>TOTAL TAXES AND UNCOLLECTIBLE RAILWAY REVENUES.....</b>	<b>2,862,015.25</b>	<b>110,263.42</b>	
<b>RAILWAY OPERATING INCOME..</b>	<b>22,371,279.85</b>	<b>3,870,391.73</b>	
<b>MISCELLANEOUS OPERATING INCOME .....</b>	<b>10,601.65</b>	<b>9,408.31</b>	
<b>TOTAL OPERATING INCOME.....</b>	<b>\$22,381,881.50</b>	<b>\$3,879,800.04</b>	
Per Mile (Average).....	\$11,165.15	\$1,928.75	
<b>NON-OPERATING INCOME:</b>			
Dividend Income .....	\$1,746,569.01	\$295,902.11	
Income from Funded Securities..	941,765.83	762,647.51	
Income from Unfunded Securities	1,175,373.09		\$261,208.61
Rent from Locomotives, Passenger Train Cars and Work Equipment .....	297,489.45	64,882.90	
Joint Facility Rent Income.....	107,419.28		32,298.06
Income from Lease of Road.....	1,549,678.12		229,354.99
Miscellaneous Rent Income.....	644,756.98	14,270.51	
Miscellaneous (Debit) .....	3,821.43		10,662.44
<b>TOTAL NON-OPERATING INCOME..</b>	<b>6,459,230.33</b>	<b>604,178.93</b>	
<b>GROSS INCOME .....</b>	<b>28,841,111.83</b>	<b>4,483,978.97</b>	
Per Mile (Average).....	\$14,387.32	\$2,228.03	
<b>DEDUCTIONS FROM GROSS INCOME:</b>			
Rent for Locomotives, Passenger Train Cars, Floating and Work Equipment and Balance for Hire of Freight Cars.....	2,700,888.04	2,102,787.07	
Joint Facility Rents.....	2,938,564.03	210,225.77	
Rent for Leased Roads.....	6,156,401.09		17,657.25
Miscellaneous Rents .....	199,292.69		5,355.90
Miscellaneous Tax Accruals.....	98,128.60	4,654.10	
Separately Operated Properties—Boston R. R. Holding Co. Guarantee .....	117,595.24		13,976.46
N. Y., W. and B. Ry. Co. Guarantee (Bond Interest).....	864,000.00		
Interest on Funded Debt.....	9,343,382.08		57,154.30
Interest on Unfunded Debt.....	1,964,519.29	184,732.33	
Miscellaneous .....	142,583.91	67,938.18	
<b>TOTAL DEDUCTIONS FROM GROSS INCOME .....</b>	<b>24,525,354.97</b>	<b>2,476,193.54</b>	
Per Mile (Average).....	\$12,234.42	\$1,227.29	

\* NET INCOME ..... \$4,315,756.86 \$2,007,785.43

Ratio of Operating Expenses to Total Operating Revenues.....	66.93%	.56%
Ratio of Operating Expenses and Taxes to Total Operating Revenues	70.68%	1.01%

NOTE.—The N. Y., N. H. & H. R. R. Co. Income Account does not include interest due from Subsidiary Companies unless earned and paid in cash.

\* During the fiscal year there was included in Maintenance \$1,066,270.47, which money has not been expended because of the inability of the Company to obtain labor and material. It has been decided, with the permission of the Interstate Commerce Commission, to carry this amount forward to the next fiscal year as a reserve to be used when the maintenance expenditures are actually made.

A balance of \$150,403.58 account of Insurance has also been carried over to the next fiscal year so that the actual balance for the fiscal year ending June 30, 1916, was \$5,532,430.91, an increase of \$3,224,459.48, as compared with actual figures for the previous year.

## OPERATING RESULTS.

## Miles Operated.

There was an increase in average miles of road operated of 1.45 miles. The average miles of track maintained was 4,307.68 compared with 4,315.49 the previous year, a decrease of 7.81 miles due to various minor track changes and remeasurements.

## REVENUES.

The Operating Revenues for the year of \$76,311,652.91 were the largest in the history of the Company and \$10,932,389.20, or 16.72% more than a year ago. The largest previous year was 1913, when the Operating Revenues were \$68,613,503.08.

## Freight.

Freight Revenue increased \$6,268,701.93, or 20.11%. There were 28,285,411 tons of revenue freight carried during the year. This was an increase of 4,443,388 tons. The number of tons of revenue freight carried one mile was 2,461,693,534, an increase of 276,584,375 ton miles. The average distance haul of one ton of revenue freight this year was 87.03 miles as compared with 91.65 miles last year. The average amount received for each ton of freight was \$1.33020 as compared with \$1.31453 a year ago.

The average number of tons of revenue freight per revenue train mile was 333.74, an increase of 0.57 tons. The average number of tons of revenue freight per loaded car mile this year was 16.27 as compared with 15.59 tons a year ago. The average number of freight cars (including caboose) per revenue train mile was 29.25 this year as compared with 31.78 cars a year ago, a decrease of 2.53 cars.

Revenue freight train miles increased 804,727 miles. The increase in freight train miles is due to the increased business handled and to the lighter loading of trains because of heavy less than carload shipments and on account of the severe weather conditions during the past winter.

## Passenger.

Passenger Revenue increased \$2,609,768.38, or 9.66%. Excess Baggage Revenue increased \$17,980.83, or 13.19%. Mail Revenue decreased \$2,383.09, or 0.33%. Express Revenue increased \$868,687.32, or 32.06%.

There were 82,246,385 revenue passengers carried during the year, an increase of 4,073,687 passengers. Total number of revenue passengers carried one mile was 1,571,060,117, an increase of 93,191,183 passenger miles. The average distance each revenue passenger was carried was 19.10 miles, as compared with 18.91 miles last year. The average amount received from each passenger was \$.36014, as compared with \$.34553 last year. The average revenue per passenger per mile this year was \$.01885, as compared with \$.01828 a year ago.

The average number of passengers per revenue train mile was 102, an increase of 5 passengers. The average number of passengers per revenue car mile was 26, an increase of 1 over last year. The average number of passenger train cars per revenue train mile was 5.1, as compared with 5 cars a year ago.

Revenue passenger train miles increased 136,906 miles, due to increased business and severe weather in the winter months.

## Other Transportation.

Other Transportation Revenue increased \$320,916.35, or 33.51%. This account includes Special Train Service, Revenue from Pullman Service, Switching and Milk Revenues.

## Incidental.

Incidental Revenue increased \$815,045.62, or 40.25%. This account includes: dining car revenue which increased \$46,045.34, or 10.57%; revenue from restaurants which increased \$178,682.85, or 183.75%; other items such as Station and Train Privileges, Parcel Room Receipts, Storage, Demurrage, etc., which increased \$579,880.44, or 51.52%; and revenue from electric current and other power sold which increased \$10,436.99, or 2.85%.

\$132,835.61 of the increase in revenue from restaurants is due to the Company's taking over the operation of the restaurants at New Haven, Providence and Willimantic, and to the operation for the entire year of the restaurant at Hartford which was not operated a large part of the previous year as the station was being reconstructed after being destroyed by fire.

## Joint Facility.

Joint Facility Revenue increased \$33,671.86, or 5.23%. This account includes the Company's proportion of revenue collected for the use of privileges in stations owned by other carriers and used jointly by this Company. Most of the increase is due to additional revenues derived from privileges in the Grand Central Terminal.

## EXPENSES.

During the year the expenses have been very heavy, due to increased business, severe winter weather, freight congestion, higher wages and the increased cost of material.

## Maintenance of Way and Structures.

The charge increased \$1,049,925.48, or 13.58%, and took 11.50% of Operating Revenues as compared with 11.82% a year ago. Removing snow and ice cost \$352,731.59, an increase of \$244,077.85.

A brief description of the character of the improvements made during the year is given below.

*Grade Crossings eliminated during the year:*

State of Connecticut.....	3
State of Massachusetts.....	2
Total .....	5

The elimination of the Corbin Avenue grade crossing at New Britain, Conn., ordered by the Public Service Commission, is about completed.

*New Passenger Stations* have been provided during the year at the following points:

Brayton, Mass.
Hanover, Mass.
Hartford, Conn.
Merwinsville, Conn.
Pawtucket-Central Falls, R. I.
Portsmouth, R. I.
South St. Station, Conn. (Suffield Branch.)

Improved facilities have been provided at twenty-seven other points.

The rebuilding of the Hartford Passenger Station is completed, and the station was opened to the public in September, 1915.

The new Pawtucket-Central Falls Passenger Station with approaches, platforms, elevators, etc., was completed and opened to the public in January, 1916.

*New Freight Stations* have been built during the year at the following points:

Braintree, Mass.
Colchester, Conn.
Hanover, Mass.
Merwinsville, Conn.
Unionville, Conn.

Improved facilities have been provided during the year at twenty other stations.

*Improvements to Roadway and Track.* Owned and leased track operated (excluding sidings) is laid with rail of the various weights per yard as follows:

Weight.	Miles.	% of Total.	Comparison of Miles with 1915.	
			Increase.	Decrease.
141 lb. ....	.82	.03	.....	.04
107 ..... 123.23		4.18	91.48	.....
100 ..... 927.19		31.45	.....	53.65
90 ..... 166.90		5.66	9.52	.....
80 ..... 477.93		16.21	23.01	.....
79 ..... 105.26		3.57	.....	6.02
78 ..... 583.22		19.78	.....	40.21
75 ..... 8.68		.29	.....	.95
74 ..... 178.35		6.05	.....	7.31
72 ..... 28.20		.96	4.61	.....
70 ..... 155.18		5.26	.....	18.94
68-67-66-60 ..... 159.22		5.40	1.47	.....
56 or under..... 34.09		1.16	.....	5.45
Total .....	2,948.27	100%	.....	2.48

NOTE.—All Steel Rail. With exception of sidings (not included in above figures) there is no iron rail in the track.

New rail was laid during the year as follows:

141 lb. ....	242 tons
107 ..... 16,467 "	
100 ..... 435 "	
93 ..... 70 "	
90 (rerolled) ..... 190 "	
88 ..... 16 "	
80 ..... 1,920 "	
78 ..... 4 "	
68 (rerolled) ..... 26 "	

Total ..... 19,370 tons

The total number of ties laid during the year was 1,014,886, of which 22,324 were creosoted and provided with tie plates and screw spikes.

*Signal and Interlocking Improvements and Additions* have been made during the year at forty-eight points. In addition, standard train order signals have been installed at forty-one points and forty-seven derrails have been connected to main line switches.

To afford protection for the public at grade crossings, fourteen crossing bells have been installed.

*Bridges.* During the year thirty-two bridges were either repaired, strengthened or renewed.

The new tracks across Winthrop Cove, New London, Conn., including construction of solid embankment and twenty-two foot concrete arch, were opened to service in February, 1916. A portion of the permanent approach to Thames River bridge, including new steel bridge over the Central Vermont tracks, was placed in service in September, 1915. Contract for the bridge substructure designed to carry a four track superstructure is awarded, and the construction of west abutment and caisson for one pier is under way. The plans for two track superstructure are completed and bids asked for.

The construction of the undercrossing for the State of Connecticut and new abutments for the Fairview Avenue bridge, in the town of Groton, Conn., are practically completed.

The construction of the twenty foot highway bridge, spanning four tracks at Stonington, Conn., ordered by the Public Utilities Commission, is completed, and was opened to the public in November, 1915.

Because of the difficulty in obtaining men and materials, some work that was to have been done within the fiscal year had to be deferred.

*Maintenance of Equipment.*

The charge increased \$1,079,326.42, or 11.04% and took 14.23% of Operating Revenues this year, as compared with 14.96% a year ago.

Included in Maintenance of Equipment are charges account of Depreciation, as prescribed by the Interstate Commerce Commission, as follows:

Steam Locomotives .....	\$284,235.80
Other Locomotives .....	76,620.24
Freight Train Cars.....	956,550.97
Passenger Train Cars.....	469,259.55
Floating Equipment .....	87,619.68
Work Equipment .....	24,464.73

Total ..... \$1,898,750.97

The equipment retired from service during the year, as shown at the bottom of Page 36, resulted in the following charges to Operating Expenses:

Steam Locomotives .....	\$61,851.67
Other Locomotives—Cr. ....	275.00
Freight Train Cars.....	113,527.45
Passenger Train Cars.....	138,691.88
Work Equipment .....	103,200.93

Total ..... \$416,996.93

*Steam Locomotives.* Total number on active list June 30, 1915..... 1,165

Locomotives retired from service during the year..... 34

1,131

New locomotives added during the year..... 28

Total on active list June 30, 1916..... 1,159

The thirty-four locomotives retired from service were all of light capacity, and in a number of instances their boilers would not meet the requirements of the Federal Boiler Inspection Act.

The hauling capacity of the steam locomotives is as follows:

Active List.	Number.	Tractive Power, Pounds.	Total Weight of Locomotives, on Drivers, Tons.	
			(exclusive of tenders).	Tons.
June 30, 1915.....	1,165	28,573,600	61,515	78,296
Added during fiscal year*.....		16,996	20	39
Added during fiscal year account new locomotives received.....	28	1,339,165	2,737	3,669
Total .....	1,193	29,929,761	64,272	82,004
Retired from service during year	34	514,747	1,189	1,632
June 30, 1916.....	1,159	29,415,014	63,083	80,372

\*Increased account of superheaters applied and change from compound to simple cylinder locomotives.

There were 657 locomotives which received general overhauling and heavy repairs during the year.

The following statement shows the character and condition of the steam locomotives on June 30, 1916:

Wheel Arrangement.	In service 6-30-15.			In service 6-30-16.			Average Weight Each Locomotive, Tons (exclusive of tender).	Average Tractive Power Pounds.
	With- 6-30-15.	Added (new) 6-30-16.	Drawn.	With- 6-30-16.	Added (new) 6-30-17.	Drawn.		
△○○	10	2	..	8	36	36	16,399	
△○○○	1	1	..	..	..	..	.....	
△○○○	203	1	..	202	61	61	27,995	
△○○○	343	8	..	335	71	61	27,617	
△○○○	35	..	..	35	76	69	32,546	
△○○○	..	..	28	28	131	98	47,827	
△○○○	367	21	..	346	54	35	17,323	
△○○○	106	1	..	105	68	52	23,511	
△○○○	12	..	..	12	104	52	25,127	
△○○○	88	..	..	88	122	75	35,614	
△○○○	..	..	..	..	..	..	.....	
△○○○	1,165	34	28	1,159	70	54	25,379	

Condition.	Number.	Per Cent.
Good .....	895	77.2
Fair .....	82	7.1
In shop for repairs.....	136	11.7
Awaiting repairs, to be repaired when suitable service demands .....	46	4.0
	1,159	100.0

Number of locomotives equipped with superheaters... 120 10.4

The forty-six locomotives awaiting repairs are of light capacity.

*Electric Locomotives.* Hauling capacity and condition:

Active List.	Number.	Tractive Power, Pounds.	Total Weight on Drivers, Tons.	Total Weight of Locomotives, Tons.
June 30, 1915.....	102	1,503,940	8,144	10,443
Retired during fiscal year....	.....	.....	.....	.....
June 30, 1916.....	102	1,503,940	8,144	10,443

There were thirty-five locomotives which received a general overhauling during the year.

*Cars in Freight Service.*

Of the total number of freight cars owned June 30, 1916, 1,268, or 3.73%, were in need of repairs.

During the year 229,543 freight cars were repaired, the repairs varying from minor repairs to general overhauling.



The five hundred steel, self-clearing hopper coal cars, ordered under an Equipment Trust and due several months ago, have not been received on account of labor and material troubles.

#### Cars in Passenger Service.

Of the total number of passenger cars owned June 30, 1916, 134, or 5.72% were in need of repairs. During the year 8,608 passenger cars were repaired, the repairs varying from minor repairs to general overhauling.

#### New Equipment in Service.

In addition to the equipment shown under Additions and Betterments on Page 36, the following equipment was received during the year under Equipment Trusts:

- 28 steam locomotives.
- 2 all-steel dining cars.
- 2 all-steel multiple unit motor cars.

On June 30, 1916, there were one hundred passenger train cars due from the Osgood Bradley Car Company on the 1916 contract. Of this number there have been received since June 30, 1916:

- 6 all-steel coaches.
- 13 all-steel 60-ft. baggage cars.
- 9 all-steel 70-ft. baggage cars.

The twenty all-steel passenger train cars due from the Osgood Bradley Car Company on the 1915 contract have all been received and were paid for out of current cash.

#### Traffic Expenses.

The charge increased \$4,464,854.39, or 18.64% and took 37.26% of Revenues as compared with 0.72% last year.

The most noticeable decreases were in Advertising and Stationery and Printing, while Outside Agencies and Industrial Bureau show increases.

#### Transportation Expenses.

The charge increased \$4,464,854.39, or 18.64% and took 37.26% of Operating Revenues this year as compared with 36.65% a year ago, an increase of 0.61%.

The miles run by revenue trains of all classes were 22,543,164, an increase of 958,282, or 4.44%. The cost per revenue train mile for Transportation Expenses was \$1.26 compared with \$1.11 for last year, an increase of 15 cents per mile.

Cost of fuel for revenue train and yard steam locomotives increased \$887,198.14 over the previous year, due to severe weather conditions, an increase in train miles and higher prices.

#### Miscellaneous Operations.

The charge increased \$253,726.11, or 42.86% and took 1.10% of Operating Revenues this year as compared with 0.91% last year. There was an increase in the cost of operating dining car service of \$48,775.11 over last year. The number of revenue meals served during the year was 417,622, an increase of 39,082 meals.

There was an increase in cost of operating restaurants of \$138,851.18, due to taking over the restaurants at New Haven, Providence and Willimantic, and the opening of the Hartford restaurant upon the completion of the station.

#### General Expenses.

The charge shows an increase of \$145,187.75, or 9.01%, and took 2.30% of Operating Revenues as compared with 2.46% a year ago. There was an increase in pensions of \$11,238.43, in valuation expenses of \$95,831.69 and in wages of general office clerks. Additional clerks were also employed because of the heavy business.

The amount of pensions paid during the year was \$187,514.68, and the cost to the Company amount of the federal act requiring valuation of railroads amounted to \$186,719.43.

#### Payrolls and Materials.

On June 30th, the total number of employees was 35,485, and the total payrolls for the year for all classes of labor paid for directly were \$29,269,103.48. Payrolls for the year increased \$3,503,789.68, or 13.6%. Payrolls for the current fiscal year will show still further increases. Expenditures for material of all kinds except equipment amounted to \$15,439,174.15.

#### Non-Operating Income.

This account increased \$604,178.93. The increase is due to dividend of \$291,864.00 from the New York, Ontario & Western Railway Company on its preferred and common stock, as compared with dividend of \$132.00 on its preferred stock last year and to an increase in interest of \$308,609.50 from The New England Navigation Company, that Company's cash income being sufficient to pay all interest for the year.

The interest on the securities of other subsidiary companies held by the New Haven Company was not included in income unless actually earned and paid in cash.

#### Deductions from Gross Income.

The charge increased \$2,476,193.54, due principally to the increase in Hire of Equipment of \$2,102,787.07 on account of congestion, embargoes, severe weather conditions and lack of facilities. Joint Facility Rents, Miscellaneous Taxes, Interest on Debt, and expenses of Trustees appointed by the Federal Court show increases.

#### Profit and Loss.

The properties as a whole, in which the Company has an interest, showed better results for the year than for several years and their physical condition is improved. What losses the Company will sustain when sales are made as ordered by the United States Court cannot now be stated but the properties have a greater value today than a year ago.

#### FINANCIAL.

The Company in the past two years has spent for the protection of its property the following:

	1916.	*1915.
For Road and Equipment.....	\$3,756,269.59	\$1,358,261.86
For Grand Central Terminal Building.....	49,661.73	643,432.37
For Additions and Betterments on Leased Steam Railroad Properties.....	273,606.20	538,664.29
For Advances to Subsidiary Companies for Additions and Betterments.....	115,000.00	520,982.06
	\$4,194,537.52	\$3,061,340.58

\* Revised for purpose of comparison.

#### Maturing Debt.

There will mature between October 1, 1916, and June 30, 1917, the following:

Portland Street Ry. Co. First Mortgage Gold Bonds, November 1, 1916.....	\$ 30,000.00
The N. Y., N. H. & H. R. R. Co. One Year Collateral Gold Notes, May 1, 1917.....	25,000,000.00

Total ..... \$25,030,000.00

There will also mature on May 1, 1917, Three Year Collateral Gold Notes of The New England Navigation Company amounting to \$20,000,000.00 for which your Company as the only stockholder is responsible.

#### Changes in Debt in hands of the Public.

(Including The New England Navigation Co.)

	Debt as of June 30, 1915.	
Mortgage Bonds .....	\$ 58,354,000.00	
Debentures .....	155,892,100.00	
Loans and Bills Payable.....	30,139,000.00	
New England Nav. Co. Gold Notes.....	20,000,000.00	
		\$264,385,100.00

	Debt as of June 30, 1916.	
Mortgage Bonds.....	\$ 58,579,000.00	
Debentures .....	155,546,919.50	
Long Term Note.....	222,000.00	
Loans and Bills Payable.....	25,007,000.00	
New England Nav. Co. Gold Notes.....	19,305,000.00	
		258,659,919.50
Decrease.....		\$ 5,725,180.50

#### Accounted for as follows:

	Increase.	Decrease.
European Loan Debentures of 1907 due April 1, 1922, acquired and cancelled....		\$ 345,180.50
Worcester & Conn. Eastern Ry. Co. 4½% First Mortgage Gold Bonds due Jan. 1, 1943, purchased for Sinking Fund.....		24,000.00
Loans and Bills Payable.....		2,910,000.00
One Year Collateral Gold Notes.....		2,000,000.00
Sale of Treasury Holdings:		
N. Y., P. & B. R. R. Co. 4% General Mortgage Bonds due April 1, 1942....	\$ 247,000.00	
New Haven & Derby R. R. Co. 5% Consolidated Mortgage Bonds due May 1, 1918. Sold by New England Navigation Company .....	1,000.00	
Naugatuck R. R. Co. 4% First Mortgage Bonds due May 1, 1954. Sold by New England Navigation Company.....	1,000.00	
The New England Navigation Company Gold Notes due May 1, 1917, held in treasury .....		695,000.00
	\$ 249,000.00	\$5,974,180.50
Decrease in debt.....	5,725,180.50	

For every \$100. of stock this Company has \$164.63 of debt, which is \$3.65 less than last year.

#### European Loan.

During the last year a large number of the Company's European Loan Debentures of 1907 found their way into this country and request was made that each 500 franc debenture be stamped at a par value of \$96.50 and each coupon \$1.93. For this stamping your Company was to be paid 2½% on the face value of each debenture so stamped. The request was granted by your Directors and up to October 1st the Company stamped 136,792 of these debentures, for which it received in cash \$330,010.70. The amount so received was invested in the European Loan Debentures of 1907 and 3,795 of these debentures of a par value of \$366,217.50 were acquired at a cost of \$329,902.03. The debentures so acquired have been cancelled and the debt correspondingly reduced. The debentures in the hands of the public stamped by your Company have since been exchanged for Dollar Debentures of denominations of \$1,000. in coupon form, so that on October 1st, the European Loan is divided as follows:

In Dollar Debentures.....	\$12,834,210.50
In 500 Franc Debentures.....	14,784,572.00
	\$27,618,782.50

#### Renewal of Notes.

The \$27,000,000.00 Five per cent. One Year Notes due May 1, 1916, were paid on that date by a new issue of One Year Four and one-half per cent. Notes due May 1, 1917, for \$25,000,000.00 and \$2,000,000.00 in cash. The loan last year with interest, discount and commission cost 7½ per cent. and this year it cost with interest and discount 4½ per cent.

#### Interest and Discount.

The amount paid for interest and discount on short term paper, including The New England Navigation Company and The Harlem River and Port Chester Railroad Company for the past three years has been:

For the year ending June 30, 1914.....	\$4,483,366.48
For the year ending June 30, 1915.....	3,662,051.36
For the year ending June 30, 1916.....	2,862,139.34

#### Securities Sold and Notes Receivable Collections.

During the year securities have been sold and cash collections made on notes receivable as follows:

	Securities Sold:	
32,208 Shares Waterbury Gas Light Co., Stock, Par value, \$805,200.00 .....		\$1,482,587.00
New York, Providence & Boston R. R. Co. Bonds.....		233,202.50
Salts Textile Manufacturing Co., Mortgage Note.....		75,000.00
9 Shares Westinghouse Air Brake Co., Stock, Par value, \$450.00 .....		1,248.65
10 Shares Post Publishing Co., Stock, Par value, \$1,000.00...		1,020.00
2 Shares Queensbury Mills, Stock, Par value, \$200.00.....		136.50
	Notes Receivable Collections:	
The New England Navigation Co.....		301,157.10
Hartford & Connecticut Western Ry. Co.....		819,781.71
Housatonic Power Co.....		615,000.00
The Connecticut Co.....		300,000.00
Rutland Railroad Co.....		150,000.00
Shearer Realty Trust.....		150,000.00
Berkshire St. Ry. Co.....		55,000.00
City Lumber & Coal Co.....		5,000.00
Miscellaneous Notes.....		1,291.79
		\$4,190,425.25

The proceeds from the sale of the securities and the collections on notes were used to reduce the debt of your Company and pay for additions to the property.

In addition there was sold by the Housatonic Power Company 23,331 shares of the capital stock of the Waterbury Gas Light Company for \$1,084,812.00; 500 shares of the capital stock of the Watertown Gas Company for \$50,000.00; and 7,000 shares of the capital stock and notes aggregating \$67,500.00 of The Westport Water Company for \$92,500.00; a total of \$1,227,312.00. This amount was used to pay off the notes of the Housatonic Power Company in the hands of the public amounting to \$400,000.00 and the balance was paid on the notes of the Housatonic Power Company held by the New Haven Company.

### Sales of Property.

Sales of land not required for the corporate purposes of the Company amounted to \$698,489.44. Land no longer needed or likely to be required by your Company, is sold whenever fair prices can be obtained.

Increases in rentals for land and station concessions have been made in many cases.

During the year the Company realized from the sale of second-hand and scrap material \$1,014,565.00.

### Settlement of the Billard Case.

The suit against John L. Billard and others was settled, and the suit withdrawn upon the receipt of \$1,250,000.00 in cash, which was applied to reduce the book value of your Company's investment in the Boston Railroad Holding Company.

### Equipment Trusts.

Under lease and conditional sale agreements, one with the Farmers Loan & Trust Company dated April 1, 1914, one with the Philadelphia Trust, Safe Deposit & Insurance Company dated November 2, 1914, and two with the Commercial Trust Company of Philadelphia dated December 1, 1915, and September 1, 1916, respectively, equipment has been purchased or contracted for at a total cost of \$8,776,037.10. A list of this equipment, some of which has been delivered and is in service, follows:

50 Pacific type locomotives.	26 All steel multiple unit trailer cars.
30 Mikado type locomotives.	25 Steel underframe milk cars.
182 All steel coaches.	50 Steel refrigerator cars.
85 All steel baggage cars.	6 Steel dining cars.
15 All steel postal cars.	500 Steel self-clearing hopper coal cars.
28 All steel smoking cars.	4 Steam locomotive cranes.
10 All steel combination baggage and smoking cars.	2 Steam wrecking derricks.
10 All steel combination baggage and mail cars.	1 Steel business car.
17 All steel multiple unit motor cars.	1041

For this equipment \$1,566,037.10 was paid as first installment of the various trusts and the balance will be paid in installments at the rate of \$638,000.00 a year for the first ten years from date of agreements and \$166,000.00 a year for the succeeding five years.

### PUBLIC CONTROL.

#### Legislation.

No legislation substantially affecting the interests of your Company was passed by any of the State legislatures during the past fiscal year. The report of the Public Service Commission of Massachusetts about the capital expenditures, investments and contingent liabilities of your Company, made as a result of an investigation ordered by the General Court of 1915, was not acted upon by the General Court of 1916.

Before the legal status of your Company is definitely settled in Massachusetts a bill must be passed by the General Court and it is earnestly hoped that public opinion and confidence in the Company will be strong enough to bring about the passage of the needed bill.

#### More time under Federal Decree.

Modifications of the dissolution decree of the United States District Court for the Southern District of New York were requested by your Company so as to permit of a reorganization of the Eastern Steamship Corporation. This request having been assented to by the Attorney General, the modifications were entered and the reorganization is now proceeding.

On June 30, 1916, your Company through the Navigation Company owned securities with a book value of \$4,200,000.00 of the Eastern Steamship Corporation which is in the hands of receivers. Since the close of the fiscal year \$1,000,000.00 par value of the Bonds and 20,000 shares of common stock have been sold, an assessment of \$375,000.00 on 15,000 shares of preferred stock has been paid and securities in the reorganized Company are to be received as follows: \$1,500,000.00 5% Income Bonds and 18,750 shares of preferred stock. Under the decree of the Court these securities must be sold by July 1, 1917, but as the conditions for sale of the property have been very adverse an application for an extension of time will be made.

A request to extend to January 1, 1919, the time in which, under the decree, the trustees of the Boston Railroad Holding Company are required to sell the stock of the Boston and Maine Railroad has been filed and is now pending in the United States District Court for the Southern District of New York. It is hoped that the Attorney General will consent to the extension as requested and give the trustees time in which to sell the stock after the proposed reorganization of the Boston and Maine Railroad has become effective.

#### Rates.

During the year much work has been done in revising both freight and passenger rates.

In August, 1915, rates for parties of 100 or more traveling together were increased from 2 cents to 2½ cents per mile, and in January 1916, commutation rates between New York and points in Connecticut, Greenwich to Stamford inclusive, were increased to the basis in effect between New York and points within that state, declared reasonable by the Supreme Court of that state.

The revision of local commodity rates having been practically completed, consideration is now being given to revision of joint class rates with connections in New England, after which the question of increasing joint commodity rates will be considered.

While in some cases reductions were made, the revision resulted in putting the rates on a slightly higher level, and further increase should be made because of the great increase in wages and prices of material.

In order to encourage the prompt unloading of cars a "track charge" of \$2.00 per delayed car day was made effective at New York and Boston and later a similar charge of \$5.00 a day at all points. The establishment of demurrage and storage rules and rates that will stimulate the removal of freight from cars and warehouses is now under consideration.

#### Valuation.

During the year, the forces of the Interstate Commerce Commission have continued the work of valuation under the Act of Congress passed March 1, 1913.

The date of valuation of the property was fixed as of June 30, 1915. The date for the valuation of the property of the Central New England Railway Company was fixed as of June 30, 1916, but the government will not begin work on that property until next Spring.

The government Roadway Parties have made a cross-section survey of the roadbed and an inventory of the track material on about 1,352 miles of road; have completed an inventory of the terminals at Boston and at Harlem River and are now at Providence.

The Land Parties have completed an investigation of the values of similar and adjacent land on about 411 miles.

The Electrical Party has completed its inventory of electrical construction on about 82 miles, and has yet to complete the Nantasket Beach Branch, the main line between Cedar Hill and Woodlawn, and the Harlem River Branch.

The Telephone and Telegraph Party has covered 949 miles.

The inspection and inventory of the bridges and buildings started in the fall of 1915. The Bridge Party has covered 830 miles of line, and the Building Party 374 miles.

The inventory of the equipment and the machinery commenced on July 5, 1916, and this will probably take about nine months.

The Valuation Department of the Company was organized in December 1913; about 145 employees are now engaged in the work; to June 30, 1916, \$301,783.94 has been expended by the Company. The work for the next year will cost about \$200,000.00.

No report about the valuation is expected from the Government until after January 1, 1918.

### GENERAL REMARKS.

The gross earnings of the Company for the fiscal year ending June 30, 1916, were the largest in its history, but the year was a difficult and somewhat unsatisfactory one because the volume of business in New England overtaxed the facilities of the Company and of many manufacturers and merchants. There were severe storms, especially in December 1915, which reduced the efficiency of the Company, particularly between New York and New Haven, and between Maybrook and Danbury, via the Poughkeepsie Bridge, and there was great congestion on all lines reaching New York City.

There was much unrest among many classes of men, due to the unusual manufacturing activity, and the Company had to deal with fifty-seven strikes and to hire a very large number of inexperienced men, many of whom remained in the service only a few days. There was considerable difficulty in getting an adequate supply of fuel, both for the Company and for manufacturers. As a result of these conditions, there were more freight cars on the road for months than could be handled promptly and economically either by the road or by the consignees, and there was great congestion and expense. At one time, on the New Haven and Central New England roads combined, there were over 57,000 freight cars, or at least 12,000 more cars than could be handled satisfactorily on existing tracks and terminals. From 12,000 to 15,000 cars of freight were ready for unloading each day, but the congestion of terminals and the lack of facilities of both the railroad and the owners of the freight rarely permitted the unloading of as many as 6,000 cars a day, and some days less than 4,200 cars were released.

So great was the congestion on all roads east of Buffalo and Pittsburgh that the Eastern Freight Accumulation Conference Committee was created, made up of the railway Presidents and on which Interstate Commerce Commissioner Clark was an effective member.

This Committee had full power to divert freight, to place embargoes and to take any action that would help the general situation.

For the first five months of this fiscal year to November 30, 1915, the gross earnings of the Company increased \$3,684,840.06, with an increase in expenses of only \$636,712.47. This was before the volume of business showed the very large increase of succeeding months and before the heavy storms and the overtaxing and clogging of terminals and other facilities. As late as August 1, 1915, the Company had 203 engines stored, in good order, waiting for business. These were quickly put into service, although they were too small for economical work, and 83 heavy engines were ordered for delivery in 1916, of which 80 were received by October 10th.

The following table shows the growth of business:

	Freight.	Passenger.
1909.....	\$26,596,000.00	\$22,853,000.00
1910.....	30,111,000.00	24,886,000.00
1911.....	30,329,000.00	26,213,000.00
1912.....	32,131,000.00	26,816,000.00
1913.....	34,072,000.00	27,896,000.00
1914.....	32,476,000.00	27,401,000.00
1915.....	31,179,000.00	27,011,000.00
1916.....	37,448,000.00	29,621,000.00

and the figures below show the amount of gross earnings used for transportation expenses and for all operating expenses:

	Transportation Expenses.	Operating Expenses.
1909.....	41.38%	66.39%
1910.....	37.80%	63.74%
1911.....	39.46%	65.80%
1912.....	38.75%	64.84%
1913.....	39.65%	68.83%
1914.....	40.33%	72.83%
1915.....	36.65%	67.49%
1916.....	37.26%	66.93%

Beginning with the fiscal year 1914, charges for Depreciation of Equipment have been made as follows, and included in operating expenses and the percentages shown on preceding page:

	Per Cent. of Gross Earnings.
Year ending June 30, 1914.....	\$1,773,365.79 2.63
Year ending June 30, 1915.....	1,724,434.53 2.64
Year ending June 30, 1916.....	1,898,750.97 2.49

So great was the unrest among men, and so difficult was it to obtain and retain them that many increases in rates of pay have been made during the year. In the months December 1915, to March 1916, inclusive, very handsome increases in gross revenue were almost entirely absorbed by increases in expenses and per diem charges for freight cars. While the amount of gross earnings used for expenses, 66.93%, was less than for several years, in spite of the conditions existing, it was higher than it should have been if the facilities of merchants, manufacturers and the Company for handling, loading and unloading freight had been adequate.

The experience of the year indicates that, as pointed out in the report of 1915, the plant of the Company must have substantial additions made to it if it is to perform the present business satisfactorily and economically and be ready to do the constantly growing business of New England. Many studies and suggestions as to improvements have been made during the past few years, and a careful review of these has been made during the last six months, and the following kinds of work should be done and equipment purchased as soon as the money, men and material can be obtained:

Heavier and Stronger Bridges (including the Thames River Bridge at New London, and the Connecticut River Bridge at Hartford) .....	\$3,400,000.00
Additional Main Tracks and Sidings.....	2,800,000.00
Improved Signals and Interlocking Plants.....	880,000.00
Improved Telephone and Telegraph Facilities, including storm proof wires between New York and New Haven.....	600,000.00
Improved Engine Terminals.....	480,000.00
Freight Terminal Improvements at large and important terminals.....	5,900,000.00
Passenger Terminal Improvements.....	1,700,000.00



Equipment, Shops and Tools.....	9,300,000.00
This includes 53 heavy steam freight engines; 60 heavy electric engines for passenger, freight and switching service; 100 steel passenger train cars; 700 freight train cars.	
Miscellaneous Improvements, such as heavier rail, heavier ballast, small additions to stations, industrial tracks, labor saving devices, etc., etc.....	2,800,000.00
Total.....	\$27,860,000.00

Of this sum approximately \$3,860,000.00 will be chargeable to Operating Expenses, leaving \$24,000,000.00 to be charged to Property Account.

Nothing is included in this estimate for the elimination of grade crossings and only those passenger terminal improvements are included which are imperative for the safe and expeditious handling of passengers, nor is anything included for carrying the Company's tracks through New London on an elevated structure,—something that should be done after the Thames River bridge is finished.

If these expenditures can be made, the capacity of the road will be increased, better service will be given to the public, and large savings in expenses can be made which are most important, especially if wages and material are to continue on the present basis. The Company is preparing to do as much of this work as practicable, believing that the only way it can be restored to a dividend paying basis is to put the plant in condition to produce and furnish safe and adequate transportation at the lowest unit cost, and to give improved working conditions to the employees.

In order to make these improvements, there is needed the co-operation of the public, the owners of the property and the employees. The public should realize that the New England railroads have to pay freight on all fuel coal for their locomotives and that a very large amount of this coal has to be brought in all rail. These freight charges on coal increase the fuel cost for a road like the New Haven between \$3,000,000.00 and \$4,000,000.00 a year as compared with the same amount of coal used by roads like the Pennsylvania, Baltimore & Ohio, and Delaware, Lackawanna & Western, and yet the passenger and freight rates on the New Haven are no higher than on those roads, and in many cases are lower. It is also to be borne in mind that the New Haven derives nearly one-half of its earnings from the operation of passenger trains and that the average distance traveled by each passenger is only nineteen miles. More than half of the passenger trains run by the Company earn less than \$1.00 per mile, and many earn less than 25 cents a mile. The average cost of running all trains one mile, both freight and passenger, without allowing anything for maintenance of track and equipment or taxes for the year was \$1.26, and including all expenses and taxes was \$2.39. A very large proportion of the freight cars handled are loaded with less than carload merchandise, and the average haul of all freight is only eighty-four miles. This large proportion of short haul passengers and merchandise makes the business of the Company a retail instead of a wholesale one, and with the increase in wages and the high cost of fuel adds largely to the expense of operation.

The Federal Government is now underpaying the Company for the carriage of mail and parcel post at least \$1,000,000.00 a year, a sum that the Company is justly entitled to today and for a number of previous years. Under these conditions, if legislation and the economic conditions of the country force upon the road very large increases in wages and higher prices for material, the public authorities should allow increased rates, if

the road is to be kept in position to furnish the amount and quality of transportation that its territory needs. The public should also realize that those improvements that add to the capacity of the road should be made first and should consent to a postponement of improvements like passenger stations and elimination of grade crossings, which, while desirable, are not absolutely necessary to the general development of the territory served by the Company and which do not increase the capacity of the road.

The owners of the securities should realize that 25,769 stockholders and at least 20,000 bond and note holders possess an unexercised power and influence which should be used for the protection of their property by demanding sane regulation and reasonable advances in rates to meet advances in wages and increased cost of material.

Recently because of pressure from four labor organizations, the President recommended and Congress passed a misnamed "Eight Hour Law," which may cause, when the law takes effect, a very large increase in expenses—between \$1,500,000.00 and \$2,000,000.00 a year, depending on the interpretation of the law. There are less than 7,500 men in these organizations on the New Haven System and less than 400,000 on all the railways in the United States. There are, as already told, 25,769 stockholders of the New Haven, and at least 600,000 holders of railway stocks in the United States (not to mention at least an equal number of bondholders), but their influence has not been exercised for their own protection. The directors and officers are doing their utmost to safeguard and improve the property, but the active influence and support of all owners of securities are needed, not only in creating a favorable public opinion, but in providing new capital, in excess of what can be saved from earnings and sales of property, in order to make those improvements that will increase the earning power of the property.

The employees should realize that they are citizens of the territory served by the road, as well as members of labor organizations. They owe a duty to themselves and their families, to the Company that furnishes employment, and to the communities in which they live, as well as to their organization. It is very much to their present and future interest to have the road adjusted to the needs of the territory served and improved working conditions created. This work can be accomplished more quickly if every man who receives pay from the Company will be economical and careful and do the best work he can. A cent a day saved by each employee would make more than \$100,000.00 a year to be put into improvements.

In the interest of the territory served the co-operation of the public, the employees and the owners is asked so that the Company will the sooner be in a position to serve adequately all interested in its welfare.

On March 14th, Mr. E. J. Pearson was appointed Assistant to the President to expedite the work of making and executing plans for the improvement work mentioned and to relieve the President of certain detailed work to which it was impossible to give sufficient attention.

During the year a very large amount of service was given to the public and the thanks of the public and of the Company are due to many loyal officers and thousands of loyal men who performed their tasks under very difficult conditions.

Statements of account of the New Haven Company and of various subordinate companies are submitted.

By order of the Board of Directors,

HOWARD ELLIOTT,  
Chairman.

# THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO.

GENERAL BALANCE SHEET, JUNE 30, 1916.

ASSETS.			LIABILITIES.		
	1916.	Comparison with 1915. Increase or Decrease.		1916.	Comparison with 1915. Increase or Decrease.
Investments:			Stock:		
Road .....	\$135,741,269.29	\$1,717,206.74	Capital Stock (in hands of public).....	\$157,117,900.00	.....
Equipment .....	61,921,134.78	439,353.61	Premium on Capital Stock (since July 1, 1909) .....	19,282,887.50	.....
	197,662,404.07	2,156,560.35		176,400,787.50	.....
Improvements on Leased Railway Property	4,169,546.08	179,124.68	Grants in aid of Construction.....	18,271.69	\$18,271.69
Sinking Funds.....	\$168,000.00	.....	Long Term Debt:		
Less Company's own issues..	168,000.00	—495.00	Mortgage Bonds (See page 42) .....	\$58,779,000.00	.....
Miscellaneous Physical Property.....	5,356,944.11	—470.84	Less held in Treasury and Sinking Fund .....	168,000.00	58,611,000.00
Investment in buildings at Grand Central Terminal, New York City.....	5,999,055.85	—2,738.27		58,611,000.00	223,000.00
Stocks—In hands of			Debentures (See Page 43) ..	157,619,269.50	.....
Trustees .....	52,119,953.36	—1,250,000.00	Less held in Treasury...	2,072,350.00	155,546,919.50
Pledged .....	31,444,196.21	.....			—345,180.50
Unpledged .....	76,463,107.59	—1,176,261.13	Miscellaneous Obligations (See Page 43) ..	222,000.00	.....
Bonds—Pledged .....	14,270,027.50	.....	Loans and Bills Payable.....	25,007,000.00	—4,910,000.00
Unpledged .....	4,470,668.50	—45,000.00	Non-Negotiable Debt to Affiliated Companies.	626,393.42	—181,143.16
Notes—Unpledged .....	35,878,646.28	—2,637,003.86		240,013,312.92	—5,213,323.66
Advances Unpledged .....	1,678,755.11	36,083.48	Current Liabilities:		
Total Investments .....	429,513,304.66	—2,740,200.59	Traffic and Car Service Balances Payable..	4,257,639.34	—172,369.44
Current Assets:			Audited Accounts and Wages Payable....	4,181,116.23	439,386.51
Cash .....	5,042,265.55	1,255,622.62	Miscellaneous Accounts Payable.....	56,000.00	.....
Special Deposits .....	2,126,457.48	13,056.66	Matured Dividends and Interest Unpaid..	1,974,744.64	28,902.45
Net Balance due from Agents and Conductors .....	5,411,821.09	3,278,755.43	Matured Funded Debt Unpaid.....	6,512.68	.....
Traffic and Car Service Balances Receivable	236,169.73	24,293.46	Unmatured Interest Accrued .....	2,378,783.33	—48,878.98
Miscellaneous Accounts Receivable.....	4,517,927.30	470,179.37	Unmatured Rents Accrued .....	481,375.80	—7,694.25
Materials and Supplies.....	6,811,461.98	1,228,762.80	Other Current Liabilities.....	179,556.05	—50,677.06
Interest and Dividends Receivable.....	698,332.55	276,212.52		13,515,728.07	188,669.23
Loans and Bills Receivable.....	3,702.18	—991.79	Deferred Liabilities:		
Rents Receivable .....	1,008.34	1,008.34	Retained Percentages due Contractors....	39,956.91	—43,203.15
Other Current Assets .....	33,019.70	—168,294.46	Deposits account of Sidetracks.....	88,277.67	16,124.67
Total Current Assets.....	24,882,165.90	5,378,604.95		128,234.58	—27,078.48
Deferred Assets:			Unadjusted Credits:		
Working Fund Advances.....	99,902.59	11,207.72	Accrued Taxes .....	192,000.00	—13,542.57
Unadjusted Debits:			Personal Injury Reserve.....	600,000.00	—97,608.69
Rents and Insurance Premiums Paid in Advance .....	50,744.90	30,736.19	Operating Reserves .....	1,216,674.05	1,216,674.05
Other Unadjusted Debits.....	3,557,718.79	489,344.74	Other Unadjusted Credits.....	2,140,314.94	172,087.14
Total Unadjusted Debits.....	3,608,463.69	520,080.93		4,148,988.99	1,277,609.93
Grand Total .....	\$458,103,836.84	\$3,169,693.01	Reserve for Accrued Depreciation of Equipment .....	5,490,954.69	1,748,089.42
			Reserve for Accrued Depreciation Account of Thames River Bridge.....	480,000.00	480,000.00
			Equipment and Personal Property Leased..	9,477,069.23	.....
			Profit and Loss—Surplus (See Pages 32 and 33) .....	8,430,489.17	4,697,454.88
			Grand Total .....	\$458,103,836.84	\$3,169,693.01

## PROFIT AND LOSS ACCOUNT.

Credit.	
Balance brought forward from June 30, 1915.....	\$3,733,034.29
Net income for the year.....	4,315,756.86
Amount received for stamping 128,883 Five Hundred Franc French Loan Debentures, par value of \$96.50 each and coupon \$1.93 each.....	310,930.24
Profit on sale of land.....	105,706.71
Final adjustment in connection with the Boston & Albany Operating Agreement of 1912, which was cancelled as of Jan. 31, 1914.....	52,325.52
Profit on sale of securities.....	26,533.52
Amount received from outside parties for cost of sidetracks and other facilities located on railroad property.....	35,789.38
Difference between cost and par value of 3,577 Five Hundred Franc French Loan Debentures purchased.....	34,336.83
Overcharges carried in "Other Unadjusted Credits," unrefundable and transferred to Profit and Loss.....	21,848.55
Cancellation of unpaid wages.....	4,661.75
Miscellaneous Credits.....	4,062.42
	<u>\$8,644,986.07</u>

Debit.	
Book value of abandoned facilities.....	\$104,198.80
Payments to other roads on unadjusted per diem charges during period October 1, 1907, to February 28, 1908.....	23,501.25
Discount on Equipment Trust Certificates Series "BB" dated December 1, 1915.....	22,785.00
Loss on Second Mortgage Notes of Park Square Theatre, Boston.....	20,000.00
Old Colony R. R. Co. account representing excess of current liabilities over current assets assumed at the time of lease, July 1, 1893....	9,621.54
Cost of printing "Dollar Debentures" exchanged for French Franc Debentures.....	4,400.00
Miscellaneous charges.....	29,990.31
Balance June 30, 1916, as per balance sheet.....	\$ 214,496.90
	<u>\$8,644,986.07</u>

## STATEMENT OF CONTINGENT LIABILITIES.

June 30, 1916.

Under the provisions of Section 4, Chapter 519, of the Acts of the General Court of the Commonwealth of Massachusetts, passed at its 1909 Session, The New York, New Haven and Hartford Railroad Company is authorized to guarantee the principal of, and the dividends and interest upon, the capital stock, bonds, notes and other evidences of indebtedness of Boston Railroad Holding Company. On June 15, 1910, the General Court of the Commonwealth of Massachusetts passed an act authorizing the issue of preferred stock (without voting power) of Boston Railroad Holding Company, in exchange for its four per cent. fifty-year Debentures dated November 1, 1909; and on January 10, 1911, the \$20,012,000.00 Debentures owned by The New York, New Haven and Hartford Railroad Company were exchanged for preferred stock. On June 30, 1916, there were held by the public 28,000 shares of preferred stock of Boston Railroad Holding Company, on which the guaranty of four per cent. cumulative dividends per annum and the payment of principal at one hundred per cent. on liquidation had been executed, and on the same date The New York, New Haven and Hartford Railroad Company owned the following stock, which is held for the Company by Trustees under decree of the Federal Court:

31,065 shares of Common Stock of Par Value.....	\$3,106,500.00
244,939 shares of Preferred Stock of Par Value.....	24,493,900.00

*The New York, New Haven and Hartford Railroad Company*

Is liable jointly with other roads for any deficiency on foreclosure of bonds of the Boston Terminal Company.

Guarantees the payment of principal and interest of the four per cent. First Mortgage Gold Bonds of the Central New England Railway Company of the issue of January 1, 1911, to the amount of \$13,427,000.00.

Is liable for the amount of the Connecticut Railway and Lighting Company Sinking Fund, \$963,932.45, which liability is offset by the securities, etc., in hands of the Trustees.

Guarantees four per cent. dividends on preferred stock of the New England Investment and Security Company, \$4,000,000.00, and payment of principal at one hundred five per cent. on liquidation; also guarantees the payment of principal, \$5,000,000.00 and interest of the New England Investment and Security Company fifteen-year Funding Gold Notes dated April 1, 1909.

Guarantees the payment of principal and interest of the Gold Debentures of The New England Navigation Company in case of termination of lease of the Old Colony Railroad Company, \$3,600,000.00.

Guarantees jointly and severally with The Pennsylvania Railroad Company the payment of the principal and interest of The New York Connecting Railroad Company First Mortgage 4½% Gold Bonds due August 1, 1953, of the principal amount outstanding of \$24,000,000.00.

Guarantees the payment of principal and interest of the four per cent. fifty-year First and Refunding Mortgage Gold Bonds of the New York and Stamford Railway Company of the issue of November 1, 1908, to the amount of \$247,000.00.

Guarantees the payment of principal and interest of the four and one-half per cent. First Mortgage Gold Bonds of the New York, Westchester and Boston Railway Company of the issue of July 1, 1911, to the amount of \$19,200,000.00.

Guarantees four per cent. dividends on preferred stock of the Springfield Railway Companies, \$3,387,900.00, and payment of principal at one hundred five per cent. on liquidation.

## ADDITIONS AND BETTERMENTS.

Owing to financial conditions, severe weather during the past winter, scarcity of labor and material, the expenditures for Additions and Betterments have been smaller than they would have been under normal conditions.

The expenditures for the year ending June 30, 1916, follow:

New or improved bridges.....	\$ 374,487.85
New York Division electrification, power plant, etc.....	154,794.34
Bridgeport, Conn., increased yard facilities.....	103,009.55
Waterbury, Conn., yard improvements.....	27,842.67
New York Division, signals.....	167,540.76
Increased weight of rail.....	48,039.82

Increased weight of other track material.....	70,662.55
Westbrook-Saybrook, passing sidings.....	117,568.12
Other new passing sidings.....	118,304.71
New roadway machines.....	19,691.94
Kingston to Midway, stone ballast.....	84,620.29
Elimination of grade crossings.....	95,038.78
Cedar Hill, Conn., coaling facilities.....	18,310.18
Hartford, Conn., reconstruction passenger station.....	71,179.33
Midway, Conn., extension eastbound lead track.....	22,982.45
Groton-Midway, four tracking.....	112,669.51
South Boston cut improvements.....	86,604.11
New York-New Haven, telegraph plant.....	94,995.75
Sundry other additions and betterments.....	84,646.04

New Equipment, consisting of 30 coaches, 10 combination passenger cars, 5 other combination cars, 24 baggage and express cars, 5 postal cars, 51 cabooses, 1 box car, was received during the year.

Cars were converted as follows: 71 coaches, 8 combination and 3 baggage and express cars into "Other company service cars," 5 coaches into combination passenger cars, 9 postal into other combination cars, 12 coaches into Officers' and pay cars, 40 box cars into "Other company service cars," and 30 flats into "Other company service cars".....

Initial payments and installments on Trust Equipment.....

Less:  
Equipment put out of service: 22 passenger, 9 freight, and 3 switch locomotives; 85 box, 52 flat, 132 coal, 38 caboose, 46 coaches, 37 combination passenger cars, 11 baggage and express, 1 other passenger car, 1 Officers', 1 ballast, 2 steam shovels, 1 wrecking car, 145 "Other company service cars" and 7 other combination cars..... \$676,546.17  
\*Real Estate sold, book value..... 592,782.73  
Facilities abandoned..... 71,003.46

Charged to Cost of Road..... \$2,415,937.23  
Charged to Equipment..... 1,209,202.56  
Trust Equipment Charged to Equipment Suspense..... 332,176.57  
874,558.10

Total as above..... \$2,415,937.23

\*Sold for \$698,489.44.

## STATEMENT OF FINANCIAL OPERATIONS, YEAR ENDING JUNE 30, 1916.

## RESOURCES TO ACCOUNT FOR.

Cash on hand and in banks June 30, 1915.....	\$3,786,642.93
Special deposits for payment of interest, dividends, etc. ....	2,113,400.82
	<u>\$5,900,043.75</u>

Income for the year:  
Balance after expenses, taxes and fixed charges..... 4,315,756.86

Decrease in sundry assets:  
Treasury securities sold—  
N. Y., P. & B. R. R. Bonds..... 247,000.00  
Miscellaneous securities..... 1,221,261.13  
Notes of and advances to other companies and individuals paid off..... 2,805,395.65  
Park Square Property..... 2,209.00

Settlement of Billard suit..... 4,275,865.78  
Grants in aid of construction..... 1,250,000.00  
Increase in sundry current liabilities less increase in sundry assets..... 18,271.69

Profit and Loss:  
Balance of sundry accounts..... 511,980.51  
381,698.02  
\$16,653,616.61

## RESOURCES ACCOUNTED FOR.

Expenditures: For additions to road.....	\$1,872,988.75
For new equipment.....	1,008,722.74
Initial payments and installments on Trust Equipment .....	874,558.10
	<u>\$3,756,269.59</u>

Less real estate sold, book value..\$592,782.73  
Abandoned structures ..... 71,003.46  
Equipment retired ..... 676,546.17

Advances account structures at Grand Central Terminal, New York..... 49,661.73  
Additions and Betterments on Leased Steam Railroad Properties..... 273,606.20  
Less charged to income..... 58,398.04

Advances to subsidiary companies covered by notes ..... 115,000.00

Decrease in Notes Payable..... 379,869.89  
Decrease in Non-Negotiable Debt to Affiliated Companies ..... 4,910,000.00

Mortgage Debt paid off..... 181,143.16  
Bonds purchased for Sinking Fund..... 345,180.50  
24,000.00

Increase in sundry assets:  
Materials and Supplies..... 1,228,762.80

Cash on hand and in banks June 30, 1916..... 5,042,265.55  
Special deposits for payment of interest, dividends, etc. .... 2,126,457.48

7,168,723.03  
\$16,653,616.61



## INVESTMENTS.

STOCKS—IN THE HANDS OF TRUSTEES APPOINTED BY U. S. DISTRICT COURT.

	No. of Shares.	Par Value.	Book Value.
*Boston & Maine R. R. Leased Lines:			
Boston & Lowell R. R. Corp.....	412	\$41,200.00	\$88,775.13
Concord & Montreal R. R.....	2,469	246,900.00	395,765.70
Concord & Portsmouth R. R. Co..	18	1,800.00	3,285.00
Conn. & Pass. Rivers R. R. Co....	1,464	146,400.00	208,162.44
Connecticut River R. R. Co.....	1,015	101,500.00	276,220.04
Hereford Railway Co.....	246	24,600.00	21,928.77
Lowell & Andover R. R. Co.....	193	19,300.00	41,919.26
Manchester & Lawrence R. R. Co..	63	6,300.00	14,081.66
Massachusetts Valley R. R. Co....	354	35,400.00	46,020.00
Nashua & Lowell R. R. Corp.....	84	8,400.00	20,170.51
Northern R. R. (of New Hampshire)	922	92,200.00	130,750.27
Pemigewassett Valley R. R. Co....	710	71,000.00	99,676.51
Peterborough R. R. Co.....	86	8,600.00	8,390.00
Upper Coos R. R. Co. (of New Hampshire) .....	73	7,300.00	10,242.75
Vermont & Mass. R. R. Co.....	184	18,400.00	30,439.77
Wilton R. R. Co.....	98	9,800.00	21,389.14
Boston R. R. Holding Co., Common and Preferred .....	276,004	27,600,400.00	26,350,400.00
Rhode Island Co., The.....	96,855	9,685,500.00	24,352,336.41
Total .....	381,250	\$38,125,000.00	\$52,119,953.36

\*Under decree of the Court the investments in Boston and Maine leased lines must be sold on or before January 1, 1917.

## NOTES—UNPLEDGED.

	Rate of Interest.	Amount.
Berkshire Street Ry. Co.....	6%	\$ 3,309,760.45
City Lumber & Coal Co.....	5%	5,000.00
Connecticut Co., The.....	6%	1,725,000.00
Harlem River & Port Chester R. R. Co., The.	4%	15,000,000.00
Housatonic Power Co.....	6%	625,000.00
Larkin, P. C.....	5%	63,894.05
Millbrook Company .....	5 and 6%	2,313,241.21
New England Navigation Co., The.....	4½, 5 and 6%	3,603,650.94
New York and Stamford Ry. Co.....	6%	204,872.08
New York, Westchester & Boston Ry. Co.....	5 and 6%	5,462,888.50
Providence, Warren & Bristol R. R. Co.....	6%	352,397.30
Rhode Island Co., The.....	6%	2,964,798.45
Trustees of the Mass. Automobile Club Trust	5%	90,000.00
Westchester Street R. R. Co., The.....	6%	153,643.30
Wood River Branch R. R. Co.....	5 and 6%	4,500.00
Total .....		\$35,878,646.28

## ADVANCES—UNPLEDGED.

	Amount.
Boston & Providence R. R. Corporation.....	\$ 101,060.62
New York, Westchester & Boston Ry. Co.....	1.00
Norwich & Worcester R. R. Co.....	832,224.58
Old Colony R. R. Co.....	745,468.91
Total .....	\$ 1,678,755.11

†The advances made to the New York, Westchester & Boston Railway Co. amount to \$3,727,325.00, but as the prospect of their being repaid is very remote, they have been reduced to a nominal value of \$1.00.

## STOCKS—PLEDGED AND UNPLEDGED.

	Shares.	*PLEDGED.		UNPLEDGED.	
		Par Value.	Book Value.	Par Value.	Book Value.
Berkshire Street Ry. Co.....	53,981			\$5,398,100.00	\$6,371,395.58
Boston & Providence R. R. Corporation.....	5,246	\$524,600.00	\$1,582,443.18		
Boston Terminal Co., The.....	2,000			200,000.00	200,000.00
Central New England Ry. Co., Common and Preferred..	{ 85,320 } { Scrip, \$136.78 }			8,532,136.78	1,921,727.96
Harlem River & Port Chester R. R., The.....	10,000			1,000,000.00	1,000,000.00
Hartford & Connecticut Western R. R. Co.....	17,482			1,748,200.00	1,201,063.69
Holyoke & Westfield R. R. Co.....	200			20,000.00	20,000.00
Iron Works Aqueduct & Water Co.....	1/12 interest			100.00	100.00
Millbrook Company .....	1,000			100,000.00	100,000.00
New England Navigation Co., The.....	494,055			49,405,500.00	53,322,899.48
New York Connecting R. R. Co., The.....	15,000			1,500,000.00	1,527,204.33
New York, Ontario & Western Ry. Co., Com. and Pfd.	291,622	29,162,200.00	13,108,397.62		
New York & Stamford Ry. Co.....	5,000			500,000.00	610,643.40
New York, Westchester & Boston Ry. Co.....	{ 49,249 } { Scrip, \$37.50 }			4,924,937.50	6,241,951.76
Norwich & Worcester R. R. Co.....	971	97,100.00	219,038.19		
Old Colony Railroad Co.....	98,132	9,813,200.00	13,065,341.80		
Pennsylvania R. R. Co., The.....	1,168			58,400.00	71,907.64
Pittsfield & North Adams R. R. Corp.....	50			5,000.00	6,965.26
Providence, Warren & Bristol R. R. Co., Com. and Pfd.	4,868	486,700.00	730,212.67	100.00	220.00
Providence & Worcester R. R. Co.....	9,551	955,100.00	2,738,762.75		
Quincy Quarries Co.....	38			1,900.00	2,110.00
Roxbury Central Wharf Co.....	7			700.00	77.00
Rutland R. R. Co.....	23,520½			2,352,050.00	2,364,977.15
South Bay Wharf & Terminal Co.....	9			900.00	19.00
Vermont Co., The.....	6,500			650,000.00	571,164.31
Westchester St. R. R. Co., The.....	7,000			700,000.00	905,783.53
Wood River Branch R. R. Co.....	336			33,600.00	21,477.50
Miscellaneous .....	15			1,500.00	1,500.00
Total .....	{ 1,182,320½ } { Scrip, \$174.28 }	\$41,038,900.00	\$31,444,196.21	\$77,133,124.28	\$76,463,107.59

\*Pledged as part of collateral securing \$25,000,000.00 One Year 4½% Gold Notes of The N. Y., N. H. & H. R. R. Co. dated May 1, 1916.

†Nominal Value.

## BONDS—PLEDGED AND UNPLEDGED.

	Rate of Interest.	*PLEDGED.		UNPLEDGED.	
		Par Value.	Book Value.	Par Value.	Book Value.
Berkshire Street Ry. Co.:					
20 Year Gold Debentures due 1925.....	5%			\$200,000.00	\$200,000.00
Central New England Ry. Co.:					
First Mortgage 50 Year Gold Bonds due 1961.....	4%	\$1,500,000.00	\$1,270,027.50		
Income Bonds (Scrip) due 1949.....	5%			608.50	608.50
Dutchess County R. R. 1st Mtge. Gold Bonds due 1940.....	4½%			5,000.00	5,230.00
Chicago & Eastern Illinois R. R. Co.:					
Consolidated & 1st Mtge. 50 Year Bonds due 1937.....	5%			22,000.00	25,300.00
Chicago, Rock Island & Pacific Ry. Co.:					
General Mtge. Gold Bonds due 1988.....	4%			38,000.00	38,000.00
Harlem River & Port Chester R. R., The:					
15 Year Prior Lien Gold Debs. dated May 1, 1915.....	5%	13,000,000.00	13,000,000.00		
New York & Stamford Ry. Co.:					
First & Refunding 50 Year Gold Bonds due 1958.....	4%			678,000.00	599,880.00
New York, Westchester & Boston Ry. Co.:					
First Mortgage Gold Bonds due 1946.....	4½%			2,190,000.00	2,190,000.00
Park Square Theatre Co., Inc.:					
Second Mortgage Notes due 1932.....	5%			275,000.00	275,000.00
Pawtuxet Valley Electric St. Ry. Co.:					
Bonds due 1933.....	5%			38,000.00	39,900.00
Vermont Co., The:					
First Mtge. 20 Year Gold Bonds due 1931.....	5%			846,000.00	846,500.00
Westchester Street R. R. Co., The:					
First Mtge. Gold Bonds dated Sept. 1, 1914.....	5%			222,000.00	222,000.00
Wood River Branch R. R. Co.:					
First Mortgage Bonds due 1924.....	5½%			56,500.00	28,250.00
Total .....		\$14,500,000.00	\$14,270,027.50	\$4,571,108.50	\$4,470,668.50

\*Pledged as part of collateral securing \$25,000,000.00 One Year 4½% Gold Notes of The N. Y., N. H. & H. R. R. Co. dated May 1, 1916.

## MORTGAGE BONDS INCLUDING BONDS OF MERGED ROADS ASSUMED.

	Rate and Character of Debt.	Total Outstanding.	Date of Maturity.	Interest Payable.	
N. Y., N. H. & H. R. R. Co.—H. R. & P. C.	4% First Mortgage	\$15,000,000.00	May 1, 1954	May 1.	Nov. 1.
New York, Prov. & Boston R. R. Co.	4% General Mortgage	1,000,000.00	April 1, 1942	April 1.	Oct. 1.
Housatonic R. R. Co.	5% Consolidated Mortgage	2,839,000.00	Nov. 1, 1937	May 1.	Nov. 1.
Danbury & Norwalk R. R. Co.	6% Consolidated Mortgage	100,000.00	July 1, 1920	Jan. 1.	July 1.
Danbury & Norwalk R. R. Co.	5% Consolidated Mortgage	400,000.00	July 1, 1920	Jan. 1.	July 1.
Danbury & Norwalk R. R. Co.	5% General Mortgage	150,000.00	April 1, 1925	April 1.	Oct. 1.
Danbury & Norwalk R. R. Co.	4% First Refunding Mtge. Gold	350,000.00	June 1, 1955	June 1.	Dec. 1.
New Haven & Derby R. R. Co.	5% Consolidated Mortgage	575,000.00	May 1, 1918	May 1.	Nov. 1.
Providence and Springfield R. R. Co.	5% First Mortgage	750,000.00	July 1, 1922	Jan. 1.	July 1.
Naugatuck R. R. Co.	4% First Mortgage	2,500,000.00	May 1, 1954	May 1.	Nov. 1.
Boston & New York Air Line R. R. Co.	4% First Mortgage Gold	3,777,000.00	Aug. 1, 1955	Feb. 1.	Aug. 1.
Providence Terminal Company	4% First Mortgage Gold	4,000,000.00	Mch. 1, 1956	Mch. 1.	Sept. 1.
† Worcester & Conn. Eastern Ry. Co.	4½% First Mortgage Gold	1,992,000.00	Jan. 1, 1943	Jan. 1.	July 1.
New Haven & Centerville St. Ry. Co.	5% First Mortgage	283,000.00	Sept. 1, 1933	Mch. 1.	Sept. 1.
Meriden Horse R. R. Co.	5% Consolidated Mortgage	415,000.00	Jan. 1, 1924	Jan. 1.	July 1.
Norwich Street Railway Co.	5% First Mortgage	350,000.00	Oct. 2, 1923	April 1.	Oct. 1.
Montville Street Railway Co.	5% First Mortgage	250,000.00	May 1, 1920	May 1.	Nov. 1.
New London Street Railway Co.	5% First Mortgage	150,000.00	Oct. 2, 1923	April 1.	Oct. 1.
Portland Street Railway Co.	5% First Mortgage	30,000.00	Nov. 1, 1916	May 1.	Nov. 1.
Hartford, Manchester & Rockville Tram. Co.	5% First Mortgage	200,000.00	Oct. 1, 1924	April 1.	Oct. 1.
Hartford Street Railway Co.	4% First Mortgage Gold	2,500,000.00	Sept. 1, 1930	Mch. 1.	Sept. 1.
Greenwich Tramway Co.	5% First Mortgage	320,000.00	July 1, 1931	Jan. 1.	July 1.
* Branford Electric Co.	5% First Mortgage	63,000.00	Oct. 1, 1937	April 1.	Oct. 1.
Torrington & Winchester St. Ry. Co.	5% First Mortgage	150,000.00	Dec. 1, 1917	June 1.	Dec. 1.
Meriden, Southington and Compounce Tramway Co.	5% First Mortgage	175,000.00	July 1, 1928	Jan. 1.	July 1.
Pawtuxet Valley R. R. Co.	4% First Mortgage	160,000.00	April 1, 1925	April 1.	Oct. 1.
New England R. R. Co.	4% Consolidated Mortgage	10,000,000.00	July 1, 1945	Jan. 1.	July 1.
New England R. R. Co.	5% Consolidated Mortgage	7,500,000.00	July 1, 1945	Jan. 1.	July 1.
Stafford Springs Street Ry. Co.	5% First Mortgage Gold	400,000.00	July 1, 1956	Jan. 1.	July 1.
New Haven and Northampton Co.	4% Refunding Cons. Mtge. Gold Bonds	2,400,000.00	June 1, 1956	June 1.	Dec. 1.
Total		\$58,779,000.00			

† In Sinking Fund (New York Trust Company, Trustee).

Worcester &amp; Connecticut Eastern Ry. Co. 4½% First Mortgage Gold Bonds ..... \$168,000.00

NOTE.—Certain property of this Company is subject to a lien under a mortgage of the New York &amp; New England Railroad Company to secure Boston Terminal Bonds of that Company to the amount of \$1,500,000, due April 1, 1939, bearing interest at 4 per cent.

\* Principal and interest to maturity deposited with the Union and New Haven Trust Co.

## DEBENTURES, INCLUDING DEBENTURES OF MERGED ROADS ASSUMED.

	Total Outstanding.	Date of Maturity.	Interest Payable.	
*Convertible 6% Debenture Certificates	\$39,029,000.00	Jan. 15, 1948	Jan. 15.	July 15.
*Convertible 3½% Debenture Certificates	9,765,450.00	Jan. 1, 1956	Jan. 1.	July 1.
Non-Convertible 4% Debentures	5,000,000.00	Mch. 1, 1947	Mch. 1.	Sept. 1.
*Non-Convertible 3½% Debentures	5,000,000.00	Mch. 1, 1947	Mch. 1.	Sept. 1.
*Non-Convertible 3½% Debentures	10,000,000.00	Apr. 1, 1954	Apr. 1.	Oct. 1.
Non-Convertible 4% Debentures	15,000,000.00	July 1, 1955	Jan. 1.	July 1.
Non-Convertible 4% Debentures	15,000,000.00	May 1, 1956	May 1.	Nov. 1.
European Loan of 1907	27,639,819.50	Apr. 1, 1922	Apr. 1.	Oct. 1.
Naugatuck R. R. Co. 3½% Debentures	234,000.00	Oct. 1, 1930	Apr. 1.	Oct. 1.
Hartford Street Railway Co. 4% Debentures Series M	165,000.00	Jan. 1, 1930	Jan. 15.	July 15.
The Consolidated Railway Co. 3%, 3½% and 4% Debentures	972,000.00	Feb. 1, 1930	Feb. 1.	Aug. 1.
4% Debentures	4,255,000.00	July 1, 1954	Jan. 1.	July 1.
4% Debentures	2,309,000.00	Jan. 1, 1955	Jan. 1.	July 1.
4% Debentures	1,340,000.00	Apr. 1, 1955	Apr. 1.	Oct. 1.
4% Debentures	2,011,000.00	Jan. 1, 1956	Jan. 1.	July 1.
Providence Securities Co. 4% Gold Debentures	19,899,000.00	May 1, 1957	May 1.	Nov. 1.
Total	\$157,619,269.50			

## MISCELLANEOUS OBLIGATIONS.

Suffolk Savings Bank for Seamen and Others Promissory Note	\$222,000.00	May 7, 1919	May 7.	Nov. 7.
*Include Treasury Holdings as follows:				
Convertible 6% Debenture Certificates	\$487,800.00	The Consolidated Ry. Co. 3%, 3½% and 4% Debentures		
Convertible 3½% Debenture Certificates	852,100.00	Providence Securities Co. 4% Gold Debentures		
3½% Non-Convertible Debentures, 1947	9,000.00			
3½% Non-Convertible Debentures, 1954	2,100.00			
		\$2,072,350.00		